The RUBBER AGE

September, 1946

CUMATE

for SPEED and SAFETY

CUMATE used alone or with ALTAX is doing a job in GR-S stocks and in GR-S-natural rubber blends.

Faster Cures...
Fewer Defects...
Good Processing

The list of CUMATE users is steadily increasing

R. T. VANDERBILT CO., Inc.
230 PARK AVENUE, NEW YORK 17, N. Y.

Du Pont
NEWSLETTER No. 9, SEPT. 1946
RUBBER CHEMICALS DIVISION
PUBLISHED BY E. I. DU PONT DE NEMOURS & CO. (INC.), WILMINGTON 98, DELAWARE

RPA No. 5

FOR EFFICIENT BREAKDOWN OF GR-S

EXTENSIVE experience with RPA No. 5 as a plasticizer for GR-S has confirmed that it aids materially in reducing breakdown time, thus increasing processing capacity.

RPA No. 5 is a chemical peptizing agent which is added to GR-S during mastication. Some of the desirable effects are:

1. Leveling out of lot-to-lot variations in GR-S.
2. Reduction in breakdown time.
3. Smoother processing.
4. Less heat developed.
5. Broader temperature range of good processing.
6. Lower minimum processing temperature.
7. Better extrusion properties.
8. Faster extrusion.
9. Less swell of extruded stock.
10. No effect on hardness or other properties of cured stock.

IMPROVED EQUIPMENT EFFICIENCY— The immediate practical advantage of plasticizing GR-S with RPA No. 5 is the greatly increased breakdown capacity. In one case plasticator capacity was increased by 83%, and Banbury breakdown capacity 100%.

The effect of RPA No. 5 continues through subsequent operations so that the slightly tougher GR-S from one pass through the plasticator with RPA No. 5 gives as soft, finished stocks as the 2-pass GR-S without RPA No. 5. Lower power consumption and stock temperatures are evident throughout. With the lower temperatures better quality stocks should result.

AMOUNT OF RPA No. 5 TO USE— The proper amount of RPA No. 5 to use depends on such factors as (1) the type of masticating equipment employed, (2) the properties of the particular GR-S in question and (3) the end results desired. For most purposes we suggest the use of the amounts indicated below:

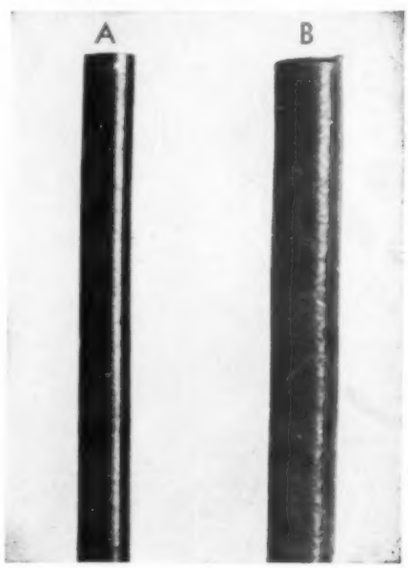
Masticating Equipment	% RPA No. 5 on GR-S
Mill	1.00 — 2%
Banbury	0.50 — 2%
Gordon Plasticator	0.25 — 1%

EFFECT ON CURE— Experimental data are inconclusive as to the effect of higher quantities of RPA No. 5 on the rate of cure of GR-S stocks. There are indications that stocks accelerated with Thionex, MBT, MBTS or DPG are slightly retarded by 2% of RPA No. 5. With activated accelerators such as SRA No. 2, Zenite B, MBT-DPG and 2MT-Accelerator 808, the vulcanizates have slightly lower modulus, equal tensile strength and higher elongations at break. With 0.5% of RPA No. 5 there is essentially no effect on the physical properties of the cured stock.

HEALTH HAZARDS— Although experience to date indicates that it is much less likely to cause dermatitis than either RPA No. 2 or RPA No. 3, which are widely used in the industry, nevertheless we recommend following the same precautions as with the other RPA's. Workmen should wear long sleeved shirts and gauntlet gloves, and should wash thoroughly any parts of the body exposed to RPA No. 5.

EXTRUSION OF GR-S TREAD STOCK

GR-S Masticated for 20 Minutes at 250° F. 300 Grams Elastomer—8x16 in. Mill



	A	B
Peptizing Agent .	1% RPA No. 5 Liquid	None
Temperature of Extrusion . . .	Low	High
Speed of Extrusion	High	Low
Swell on Extrusion	7%	55%

DU PONT BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

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SUPERB OIL RESISTANCE

is only one of Hycar synthetic rubber's unusual and valuable properties. Others are listed in the box at the right.

But most important, these properties may be had in an almost limitless number of combinations, each designed to meet specific service conditions of the finished Hycar part.

Our files contain more than 5000 recipes for Hycar compounds—each compound engineered to do a certain job. Parts made from HYCAR have seen service in *every* industry, giving long life, dependability, and economical operation.

That's why we say, ask your supplier for parts made from Hycar. Test them in your own application, difficult or routine. You'll learn for yourself that it's wise to use HYCAR for long-time, dependable performance. For more information, please write Department HD-9 B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.

CHECK THESE SUPERIOR FEATURES OF HYCAR

1. **EXTREME OIL RESISTANCE** — insuring dimensional stability of parts.
2. **HIGH TEMPERATURE RESISTANCE**—up to 250° F. dry heat; up to 300° F. hot oil.
3. **ABRASION RESISTANCE**—50% greater than natural rubber.
4. **MINIMUM COLD FLOW**—even at elevated temperatures.
5. **LOW TEMPERATURE FLEXIBILITY**—down to —65° F.
6. **LIGHT WEIGHT**—15% to 25% lighter than many other synthetic rubbers.
7. **AGE RESISTANCE**—exceptionally resistant to checking or cracking from oxidation.
8. **HARDNESS RANGE**—compounds can be varied from extremely soft to bone hard.
9. **NON-ADHERENT TO METAL**—compounds will not adhere to metals even after prolonged contact under pressure. (Metal adhesions can be readily obtained when desired.)

Hycar

Reg. U.S. Pat. Off.

LARGEST PRIVATELY PRODUCED BUTADIENE TYPE

Synthetic Rubber

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY

This advertisement appeared in a long list of carefully selected business papers TO HELP YOU SELL parts made from HYCAR.

HIT HARD AND NOT HURT!

TYPICAL REACTION of products made with Philblack A! They've got remarkable resistance to abrasion . . . to cut and crack growth too! What's more, Philblack A is known as a champ for its greater tensile strength, its electrical conductivity, low hysteresis, and high modulus.

And talk about finished appearance! Manufacturers of tires, tubes and rubber products can testify—Philblack A provides plenty of sales appeal!

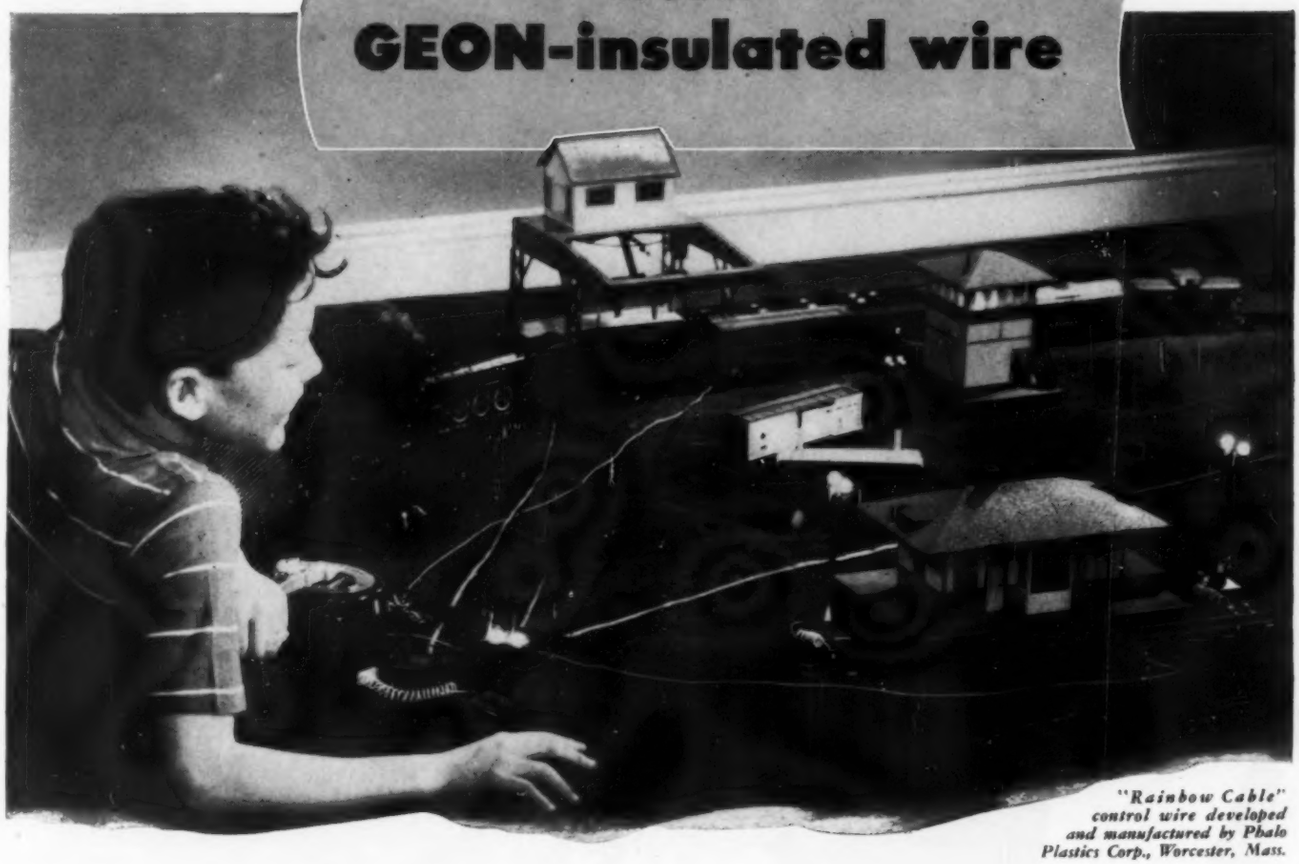
If you like fast mixing cycles, and easy processing, Philblack A's the fellow for you.

PHILLIPS PETROLEUM COMPANY

Philblack *Division*

EVANS SAVINGS AND LOAN BUILDING · AKRON 8, OHIO

He runs his road with GEON-insulated wire



"Rainbow Cable" control wire developed and manufactured by Phalo Plastics Corp., Worcester, Mass.

Another interesting application for GEON *raw materials*

THE things that Bill used to do with his hands to keep his railroad running—coupling and uncoupling cars, loading and unloading, turning switches—are all done by electricity on the modern American Flyer that huffs and puffs and belches smoke just like its full-sized counterpart.

That calls for connecting wires that are easy to identify, that stand rough usage, that won't crack, get gummy or peel, that will keep fire hazards to a minimum. That's why the A. C. Gilbert Company selected wire with insulation made from GEON. It can be brilliantly colored in a wide range, it wears indefinitely, resists aging and ozone, and is self-extinguishing—won't support combustion.

Hundreds of other products made from GEON—raincoats, handbags, luggage, upholstery, tablecloths, tank linings, fly swatters, to name a few—have these properties plus resistance to foods, acids, water, oil, heat, cold, sun, air, mildew, and many other normally destructive factors. They may be extruded, pressure or injection molded, calendered or cast into sheet or film. GEON may be applied as a coating to fabrics, fibres, and papers of all kinds. There are applications for GEON in *every* home, in *every* industry.

While we make no finished products from GEON raw materials, we will be glad to work with you on any special product problems. Just write Department K-9, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. In Canada: Kitchener, Ontario.

Geon
Polyvinyl Materials
A TRADE MARK OF B. F. GOODRICH CHEMICAL COMPANY

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY

For technical data please write Dept. RB-9

B. F. Goodrich Chemical Company

A DIVISION OF
THE B. F. GOODRICH COMPANY

ROSE BUILDING, CLEVELAND 15, OHIO

Sterling-S

Cabot Sterling S is an SRF* carbon black of unexcelled qualities for resilience and high loading capacity. It has low heat generation, too, both in carcass stocks and tubes. Sterling S is pelletized, dustless, easy to handle. It is manufactured by the world's largest maker of Furnace Blacks.

SRF

*SEMI-REINFORCING FURNACE BLACK

CABOT

GODFREY L. CABOT, INC. 77 FRANKLIN ST., BOSTON 10, MASS

Get *Perfect Separation* at the bias cutter with CLIMCO PROCESSED LINERS

Easy separation of stock and liner is all important at the bias cutter—for stock adhesions at that point mean time lost and extra expense. You can avoid such production headaches by using Climco Processed Liners that separate perfectly from the stock.

In addition, Climco Processing adds greatly to the life of your liners, protects the stock, and preserves its tackiness. Rejects and stock losses due to gauge distortion are substantially reduced.

Note in the illustration how the liners have been carefully rerolled after separation. This saves time in the long run because it eliminates a second rolling before the liner is used again.

A trial of Climco Processed Liners will soon show you why so many rubber companies have *standardized* on Climco.

GET THE FULL STORY ON CLIMCO PROCESSING

Illustrated booklet tells about Climco Liners and Linerette. Tells how to get better service from liners. Write for your copy now.

LINERETTE
INTERLEAVING PAPER
Treatment Contains NO OIL OR WAX
Samples on Request

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CLIMCO PROCESSED LINERS

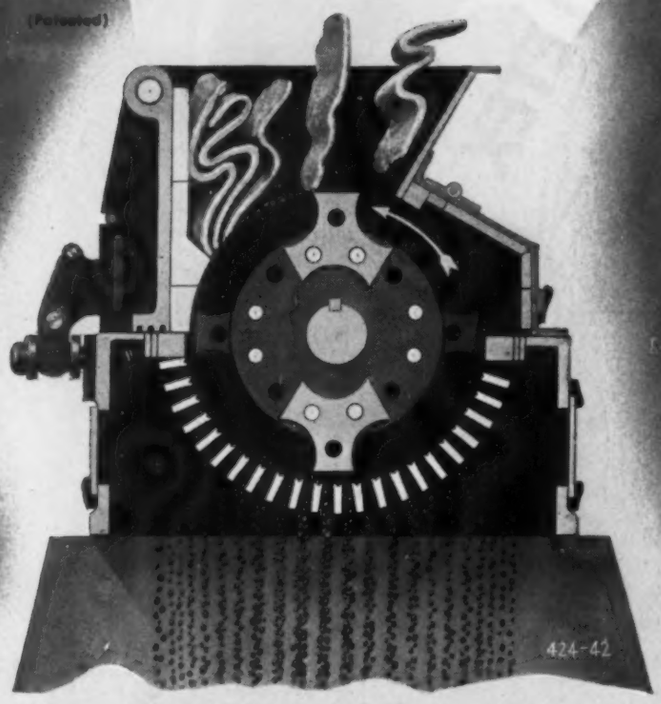
for Faster, Better Production at Lower Cost

HERE'S A *Natural* FOR SHREDDING ALL TYPES OF *Synthetic* RUBBER

This new-type Jeffrey Shredder—Series "BD"—is designed especially for the tough reduction problem presented by plastics, synthetic rubber and other chemical products.

It not only shreds coagulated material into small pellets for easier drying, but permits the injection of neutralizing chemicals or water when such mixing is necessary. Get Bulletin No. 768.

(Patented)



CONSULT *Jeffrey* ON ALL REDUCTION PROBLEMS

Crushing, grinding, pulverizing, shredding—any reduction job is a job for Jeffrey.

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Free-flowing PELLETEX is economical as well as convenient. You get the use of every particle.

And, you get much more. As pioneers and leaders for 18 years in the production of semi-reinforcing furnace blacks, General Atlas has developed a technique born of this experience that insures a uniform, thoroughly dependable product.

The confidence thus gained is your best insurance of the continued high quality of PELLETEX.

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Our services—as they have for 64 years—remain SOLELY at the command of the Industry.

U. S. RUBBER RECLAIMING COMPANY, INC.

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TRENTON . . . H. M. ROYAL, Inc., 689 Pennington Avenue • TORONTO . . . H. VAN DER LINDE, Ltd., 156 Yonge Street

64 Years Serving the Industry Solely as Reclaimers

DOW CORNING SILICONES

SILASTIC
FLUIDS
VARNISHES
RESINS
GREASES

withstand heat
resist oxidation
exclude moisture

SILASTIC* GASKETS

for the
most powerful aircraft
engine ever built!

chosen best among all gasket materials tested for service at 450°F.

Silastic gaskets fabricated from Dow Corning silicone rubber by the Connecticut Hard Rubber Co. seal 56 rocker boxes of the 28-cylinder Pratt & Whitney Wasp Major.

"NOTHING BUT THE BEST!" That's the policy followed by Pratt & Whitney in selecting materials for the powerful new 28-cylinder, 3650 h.p. Wasp Major.

That's why Silastic was chosen for these rocker box gaskets. Factors in the choice were Silastic's resiliency at the 450°F. operating temperature, resistance to the hot oil, and convenience in handling.

Silastic will fly with the Wasp Major in such giant new airliners as the Boeing Stratocruiser, Douglas Globemaster, Martin Mars, and Republic Rainbow.

If you need a rubber-like material that's resilient up to 500°F. and flexible down to −70°F., call for "Silastic Facts" No. 1A—and *TRY SILASTIC!*

*Trade Mark, Dow Corning Corporation

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Chicago Office: Builders' Building Cleveland Office: Terminal Tower
New York Office: Empire State Building
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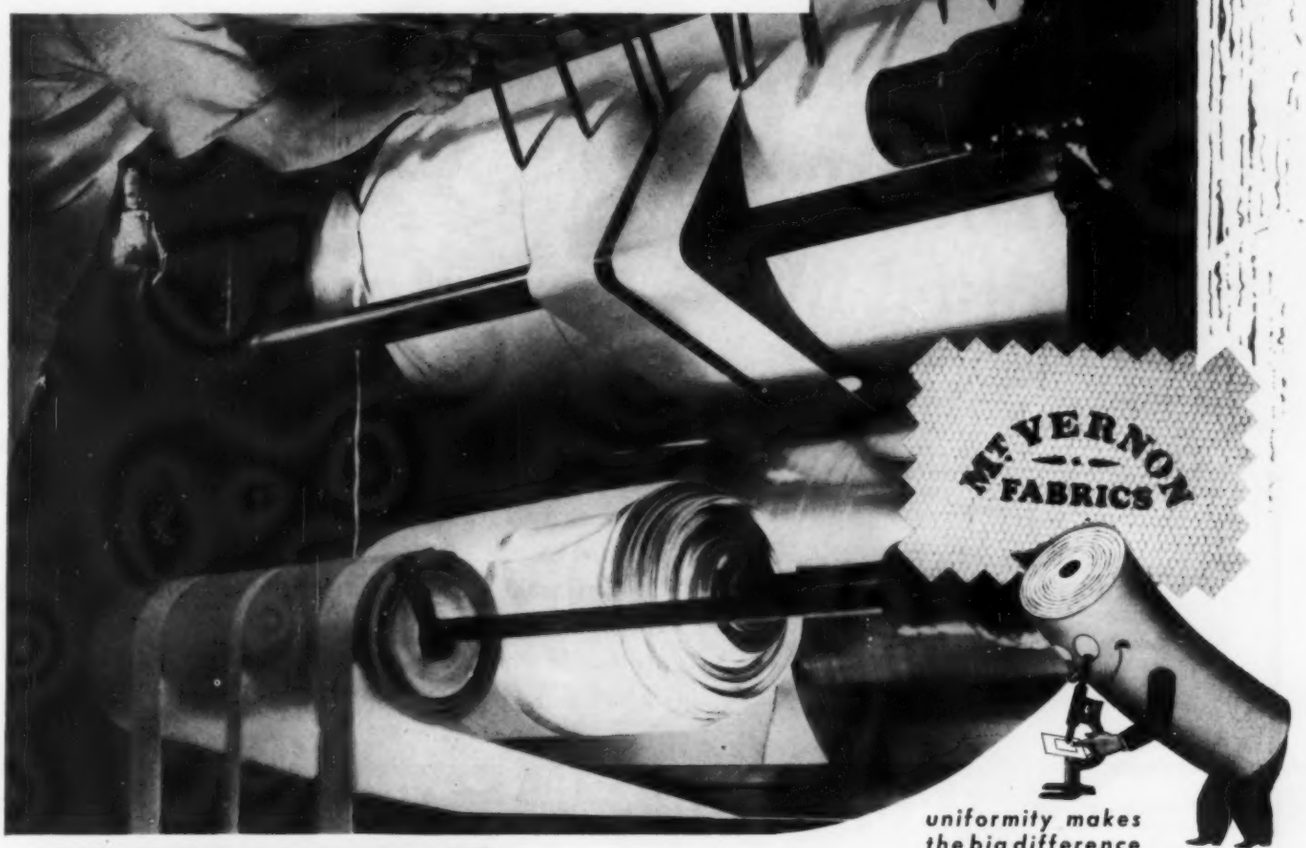
Fabric Uniformity means Product Uniformity

BECAUSE THE UNIFORMITY of your rubber products can be only as good as the fabric employed, successful production depends, to a large extent, on the uniformity of the fabric used. MT. VERNON fabrics have *that constant uniformity*. Made from choice grades of cotton and woven under rigid laboratory controls, they make for consistent product quality. For better results—specify MT. VERNON fabrics.



uniformity makes the big difference

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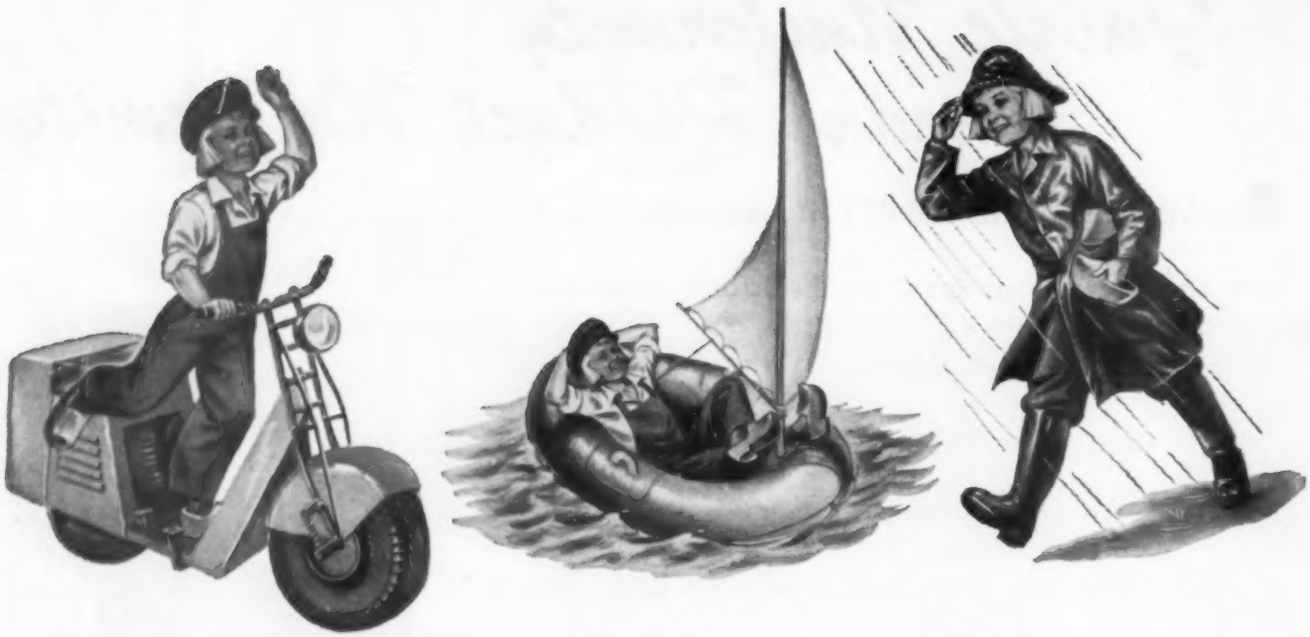

For Tires... or Boats... or Rainproof Coats...

"If it's made with RUBBER ...it's better made with RED LEAD"

In almost every field...tires or soles or plugs for bowls ...*if it's made with Rubber, Red Lead will make it better.*

Manufacturing experience has emphatically confirmed our earlier tests, and established that compounding rubber with #2 RM Red Lead gives the worthwhile benefits listed at the left.

If you make tires, *all seven* advantages are yours, while *most* of them apply with other products, too... regardless of whether you're working with GR-S, GR-S-10, GR-M, GR-A, GR-I, natural rubber or vinyl elastomers.

Technical literature and counsel on your specific application will be supplied upon request to the Rubber Division of our Research Laboratories, 105 York Street, Brooklyn 1, N.Y.

CHECK THESE REASONS FOR COMPOUNDING RUBBER WITH #2 RM RED LEAD

1. Improved Heat Stability—Retention of Elasticity
2. Lower Heat Build-up—Cooler Running
3. Economical
4. Faster Curing Rate
5. Extended Curing Range
6. Excellent General Physical Properties
7. Safe Processing

NATIONAL LEAD COMPANY

New York 6; Buffalo 3; Chicago 8; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6; (National Lead Co. of Mass.) Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30, (National Lead Co. of Pa.); Charleston 25, W.Va., (Evans Lead Division).

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Division of United States Rubber Company

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• Neoprene industrial truck casters and wheels. Photo courtesy L. H. Gilmer Co., Phila., Pa.

• R. R. C.'s Approved Standard

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Exacting quality control . . . Uniform lightness

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cross section of a *Miracle*

You are looking at a section of a rayon cord tire cut to show you the veins of high strength rayon running through the rubber. Tire makers tell us that these cords make this the safest, longest-wearing passenger car tire that ever traveled a highway.

The experience of the Army, of truck and bus fleet operators, shows that rayon cord tires are less subject to blowout and road failure. That's because rayon runs cooler and maintains higher tensile strength as the tire heats up. With heat breakdown reduced, there's greater mileage in store, and more comfortable riding too, since rayon's greater strength per unit of weight permits a lighter tire that offers less rolling resistance. When passenger car tires of rayon are more generally available, you're in for a real eye-opener in tire performance.

Industrial Rayon has played a major part in the development of rayon for tires. By our exclusive Continuous Process, our tire rayon—Tyron by name—is produced and processed as one continuous strand. To tire manufacturers this means the highest degree of uniformity—the characteristic most desired by tire manufacturers.

You should know all about Rayon Cord Tires—so we've told the complete story in a booklet that's yours for the asking:

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Send for it, it's FREE.

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500 Fifth Ave., N. Y. 18, N. Y.

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rayon for tires

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SYNTHETIC RUBBER & RESIN COMPOUNDS

Custombuilt

FOR YOUR PRODUCT OR PROCESS

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A practical approach to the use of synthetic dispersions in your product is to refer your problem to our laboratory. No matter what the process—coating, impregnating, or bonding—our experienced technical staff can compound the material best suited to your requirements. In the case of an entirely new product, we will work out all the details of manufacturing procedure—from pilot operations to commercial production in your plant. Why not talk it over with one of our technical representatives?

GRS latex types 2 and 3, normal and concentrated, available from stock.

A Complete Service to Manufacturers

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Agents for Rubber Reserve Company for storage and distribution of natural rubber latex. Distributors for Rubber Reserve Company for synthetic latex. Operators of the Government-owned Baytown, Texas, synthetic rubber plant in collaboration with the General Tire & Rubber Co.

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for RUBBER, SYNTHETICS and PLASTICS

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FOR HIGH TEMPERATURE OPERATION:

- SPECIAL BEARING METALS or ANTI-FRICTION BEARINGS, provided with *flood lubrication* and *temperature conditioning of oil.* (Cooling before recirculating.)
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FOR MAINTAINING CLEAN, UNCONTAMINATED STOCK:

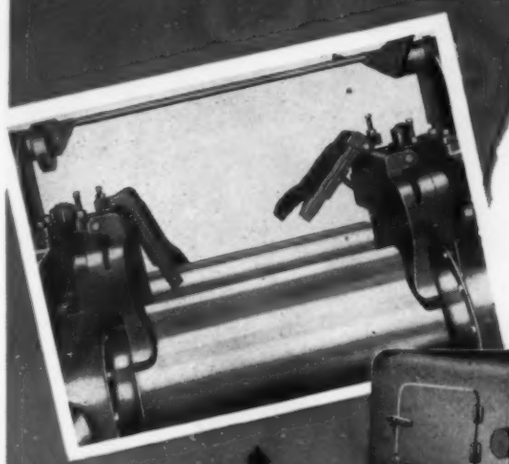
- BEARING OIL SEALS that *really* keep oil *in* bearings and stock *out* of bearings.
- TILTABLE STOCK GUIDES to facilitate cleaning.
- STOCK GUIDES AND STOCK PANS made of chromium or stainless steel.
- SMOOTH, dust-shedding SURFACES.

ADDITIONAL ADVANTAGES:

- New and Unique Types of Power Transmission.
- Precision Front Roll Position Indicator.
- Motorized Roll Adjustment.
- Power or Manually Operated Roll Scrapers.

Many of the above improvements also apply to our Modern CALENDERS.

Adamson United Company engineers specialize in the design and construction of equipment for special or unusual processing requirements. Their experience and abilities are at the service of the industry.



Close Up of Tiltable Guide

Adamson United 28" x 72", 4 Roll Calender.

Adamson United 12" x 24" Mill

ADAMSON UNITED COMPANY AKRON, OHIO

DISTRICT SALES OFFICES:
Bloomfield Bank & Trust Building, Bloomfield, N.J. Telephone: Bloomfield 2-4143
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Plants at Pittsburgh, Vandergrift, New Castle, Youngstown, Canton

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Today, as essential materials are released for general use — and demand for them is heaviest — Whittaker is among the first to offer them for sale. The first talcs to leave India, Italy and France for commercial use after the war's close, for instance, were Whittaker imports. If a product is available at all, it is Whittaker's unswerving endeavor to have it first... and in the widest variety of desirable grades.

Whittaker has ten well-informed agents, fourteen plants and well stocked warehouses, strategically located to serve all the United States and southeastern Canada.

Call on Whittaker for prompt attention to your wants. Order commercial quantities with full assurance of getting materials of controlled quality and uniformity — or write, at any time, for technical data, laboratory samples, or for advice.

205

WHITTAKER
EST. 1890

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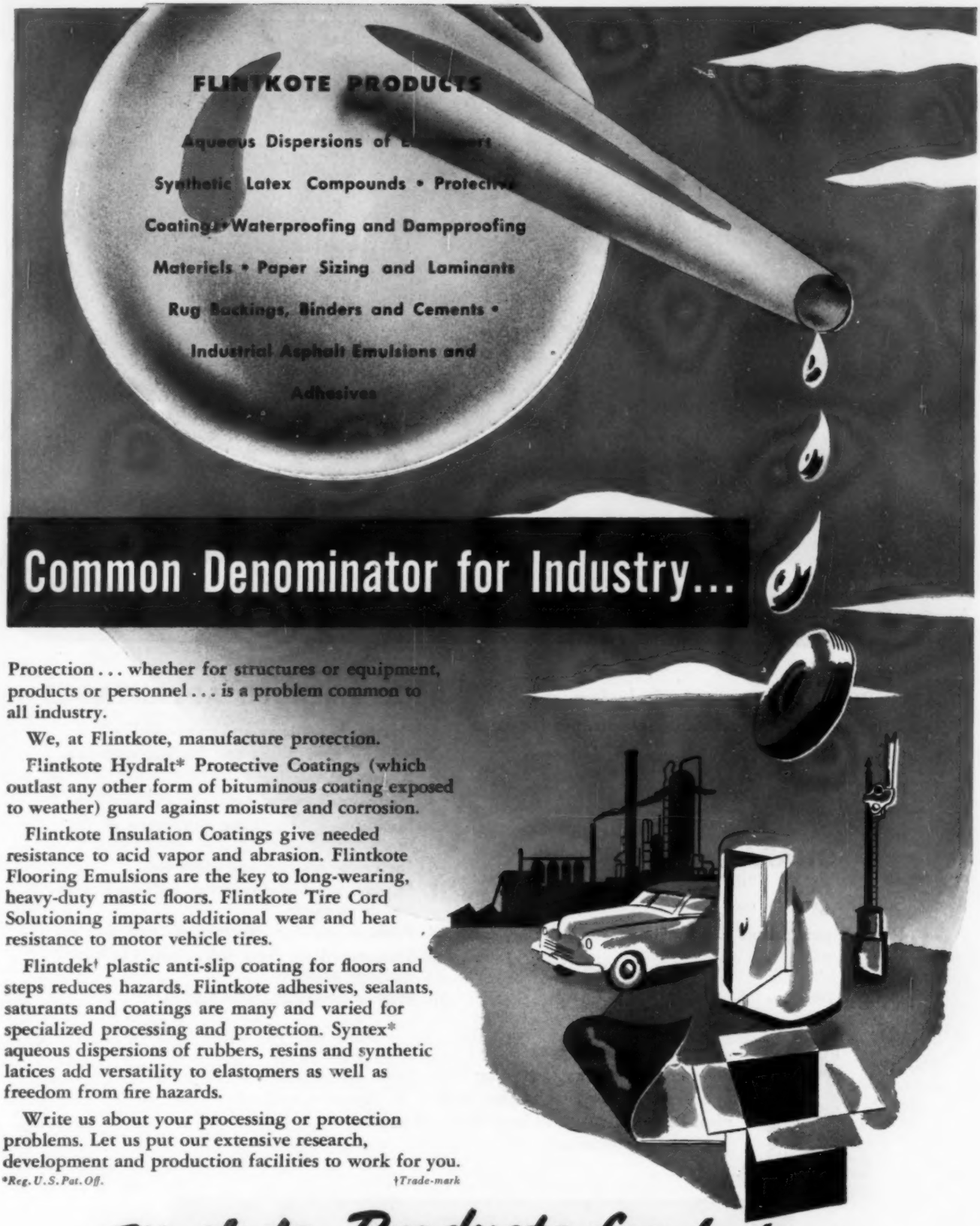
FLINTKOTE PRODUCTS
Synthetic Latex Compounds • Protective
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Materials • Paper Sizing and Laminants
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Industrial Asphalt Emulsions and
Adhesives

Common Denominator for Industry...

Protection . . . whether for structures or equipment, products or personnel . . . is a problem common to all industry.

We, at Flintkote, manufacture protection.

Flintkote Hydralt* Protective Coatings (which outlast any other form of bituminous coating exposed to weather) guard against moisture and corrosion.

Flintkote Insulation Coatings give needed resistance to acid vapor and abrasion. Flintkote Flooring Emulsions are the key to long-wearing, heavy-duty mastic floors. Flintkote Tire Cord Solutioning imparts additional wear and heat resistance to motor vehicle tires.

Flintdek† plastic anti-slip coating for floors and steps reduces hazards. Flintkote adhesives, sealants, saturants and coatings are many and varied for specialized processing and protection. Syntex* aqueous dispersions of rubbers, resins and synthetic latices add versatility to elastomers as well as freedom from fire hazards.

Write us about your processing or protection problems. Let us put our extensive research, development and production facilities to work for you.

*Reg. U. S. Pat. Off. †Trade-mark

Flintkote-Products for Industry

THE FLINTKOTE COMPANY · INDUSTRIAL PRODUCTS DIVISION
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30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.
Los Angeles • New Orleans • Washington • Toronto • Montreal

HERCO-HT

A WIDE RANGE OF USEFULNESS

HERCO-HT is an aromatic hydrocarbon softening oil—a true chemical softener for Crude Rubber, GR-S, Buna N, and Neoprene.

CHARACTERISTICS

Specific gravity	1.031
Pounds per gallon	8.59
Color	Dark Green
Boiling point	575° F.

RECOMMENDED ADVANTAGES

1. Hastens breakdown and compounding.
2. Rapidly wets fillers and loading materials.
3. Assists calendering.
4. High speed extruding.
5. Enhances impregnating properties of friction compounds.
6. Increases tackiness and resilience.
7. Imparts greater elongation with no loss in tensile strength.
8. Reduces swelling effect of oils and greases.
9. Does not bloom from vulcanizate when used in large amounts.
10. Highly compatible with GR-M.

RUBBER H AND M PIGMENTS Chemicals

For samples and compounding information on softening oil and waxes please write to Herron Bros. & Meyer—Our Technical Representative will be glad to call on you.

HERRON BROS. & MEYER

82 BEAVER ST., NEW YORK 5, N. Y.

516 OHIO BUILDING, AKRON, OHIO

SUPPLIERS OF RUBBER CHEMICALS

Which of these Rubber Chemicals will fit your Processing Needs?

TRITON R-100

An efficient, low-cost dispersing agent primarily recommended for latex compounding of GRS. Also useful for reducing viscosity or increasing solids content of polymer latices. TRITON R-100 is a salt of a complex organic acid, supplied as a free-flowing, granular product.

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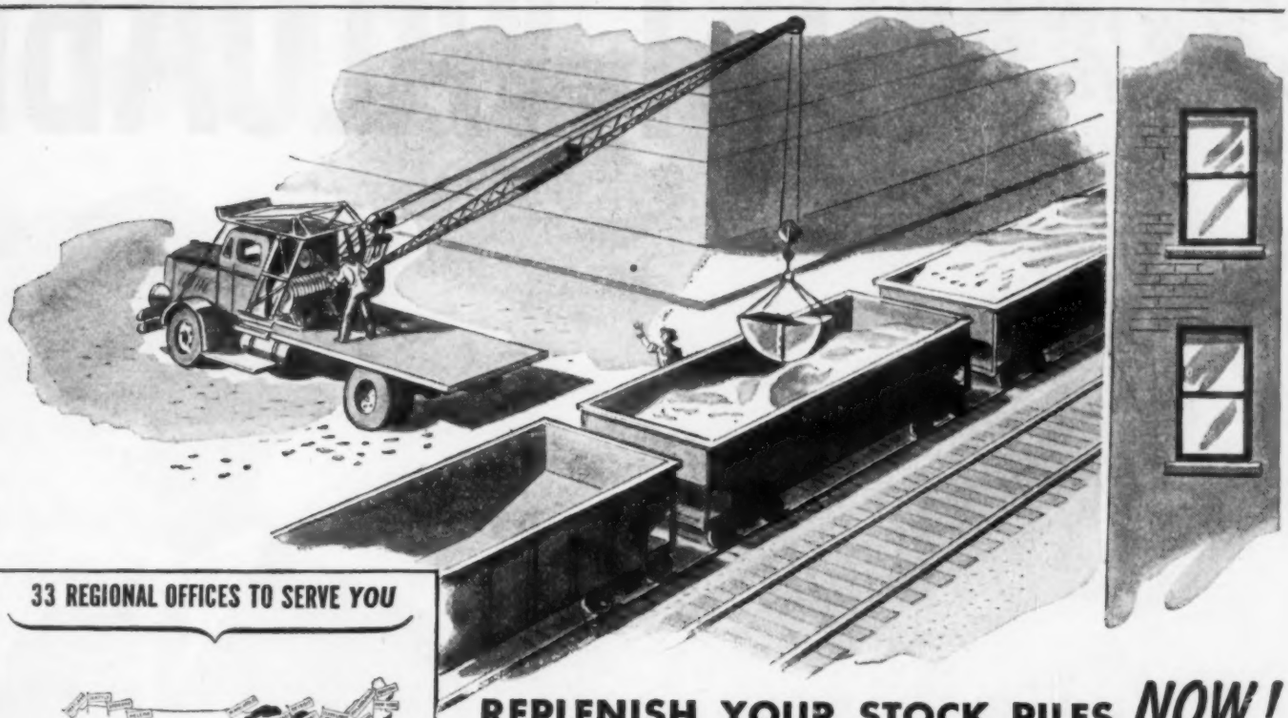

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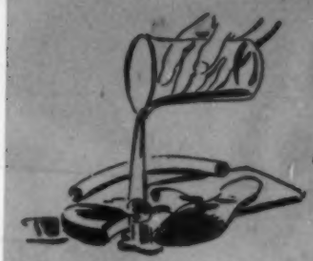

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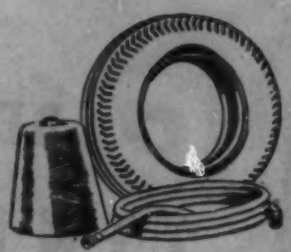

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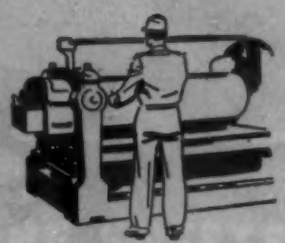

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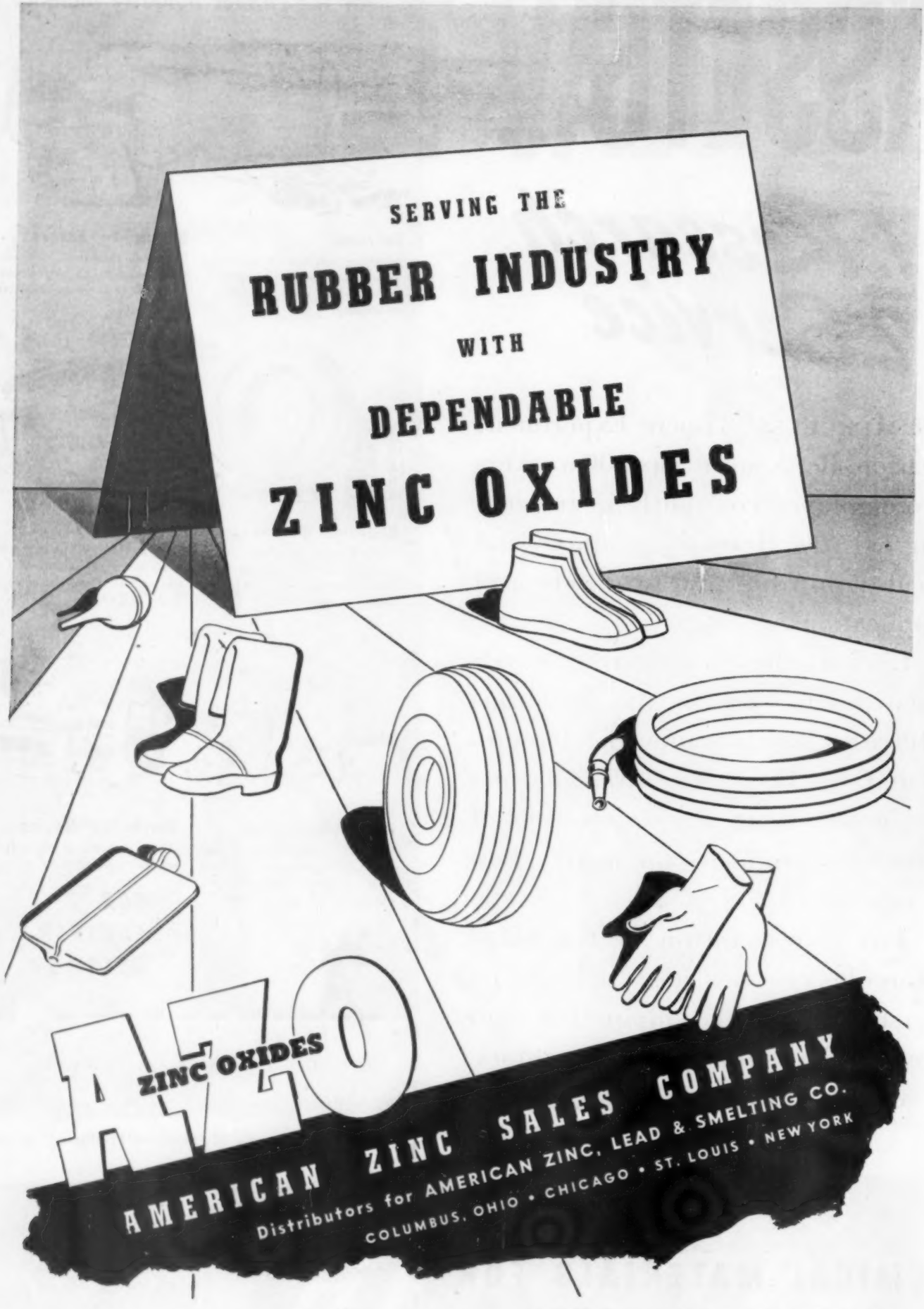
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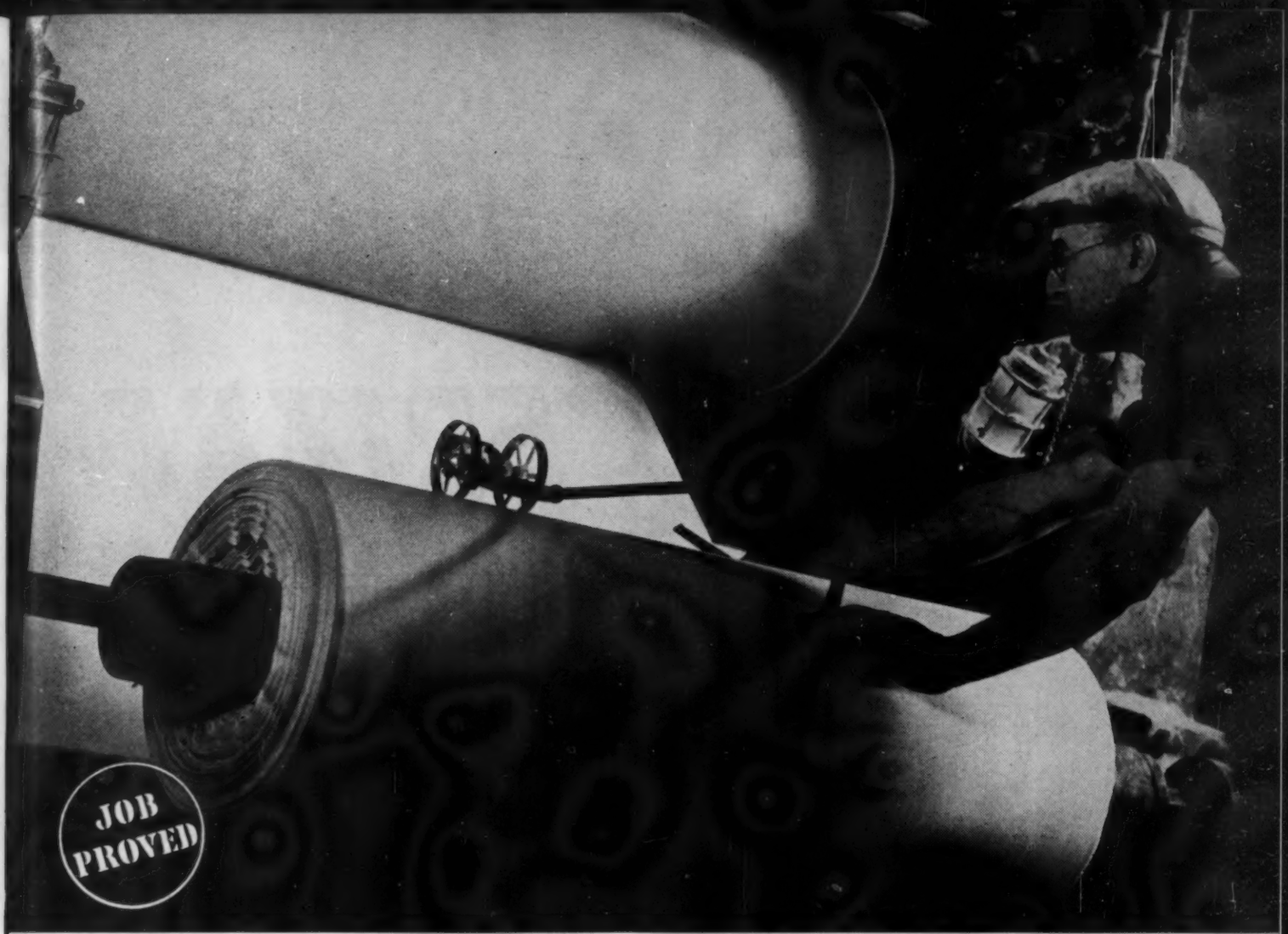

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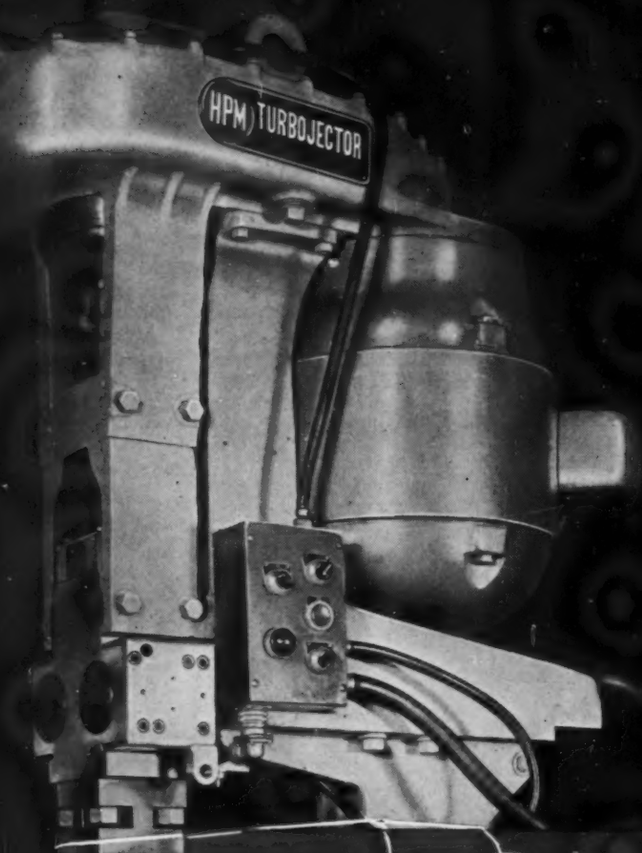

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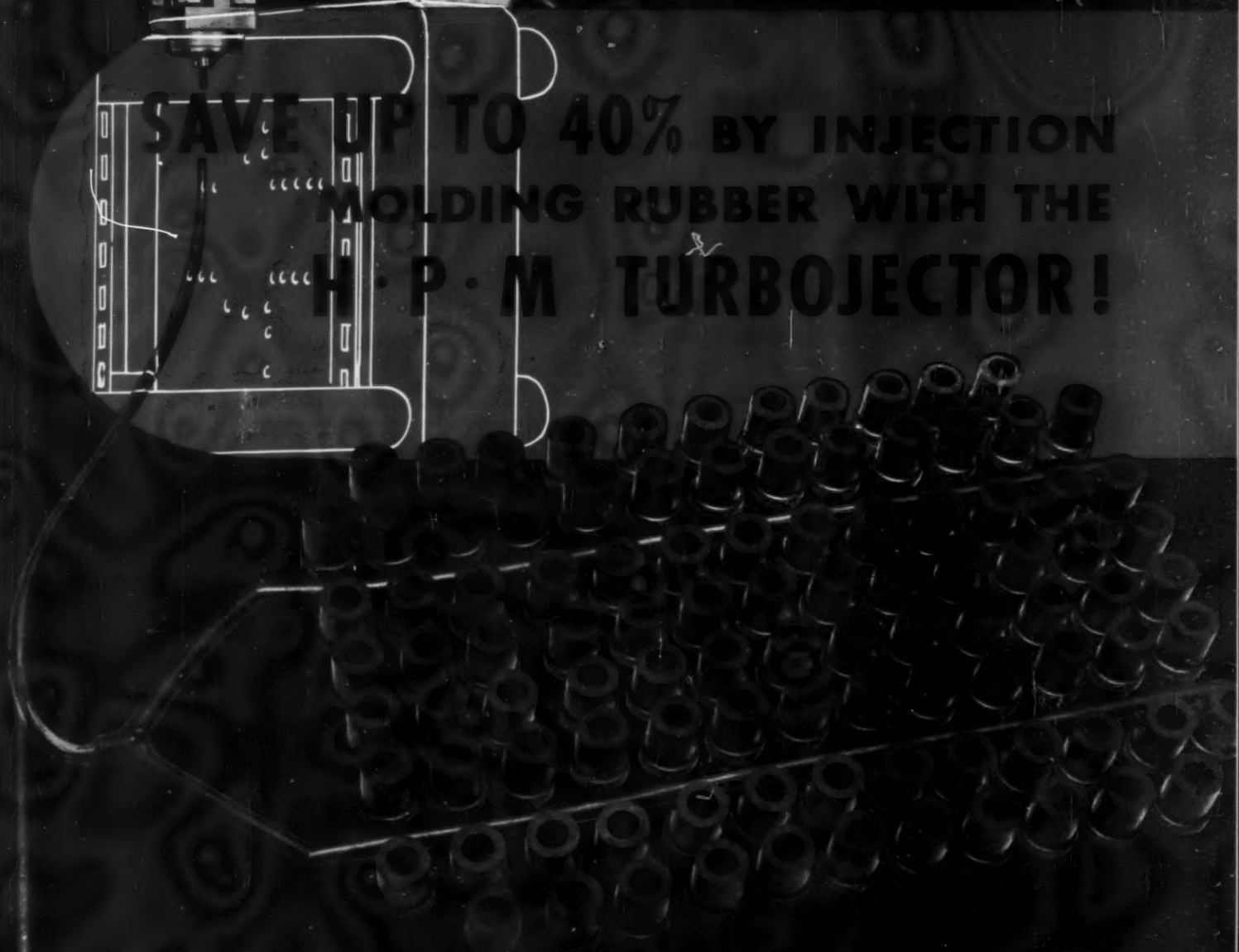

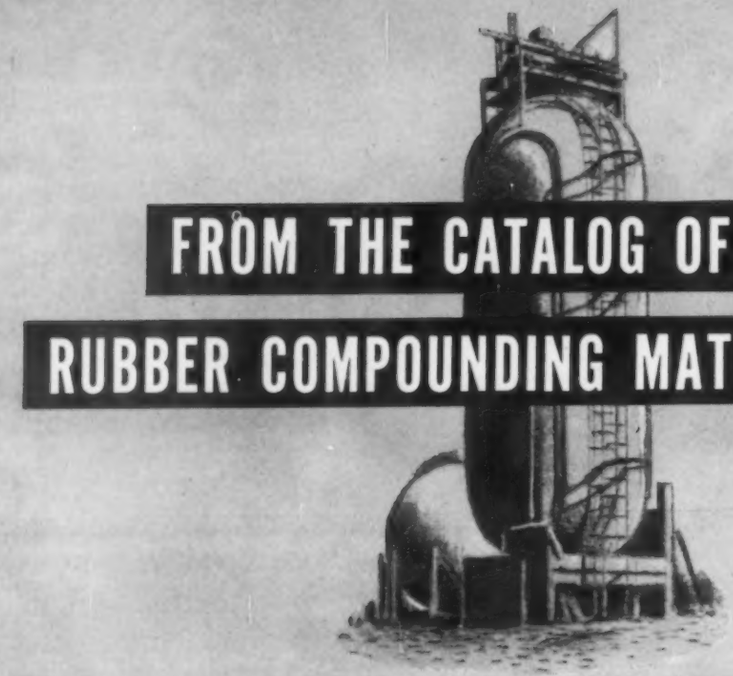

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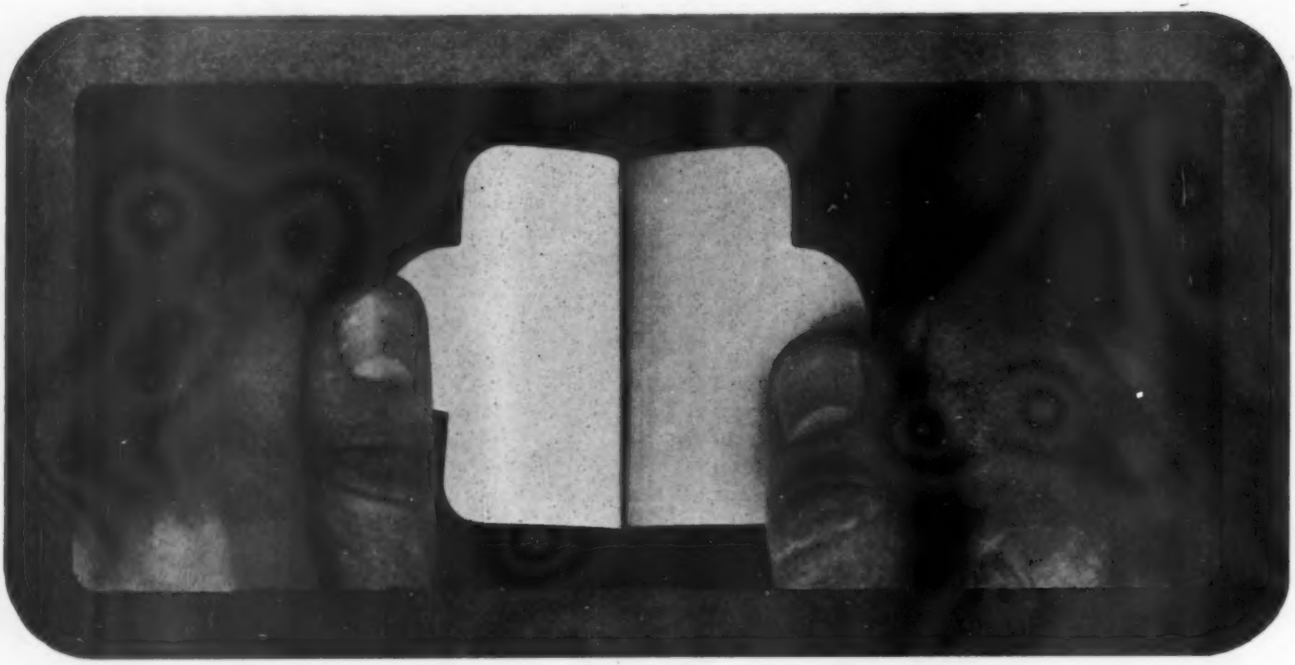

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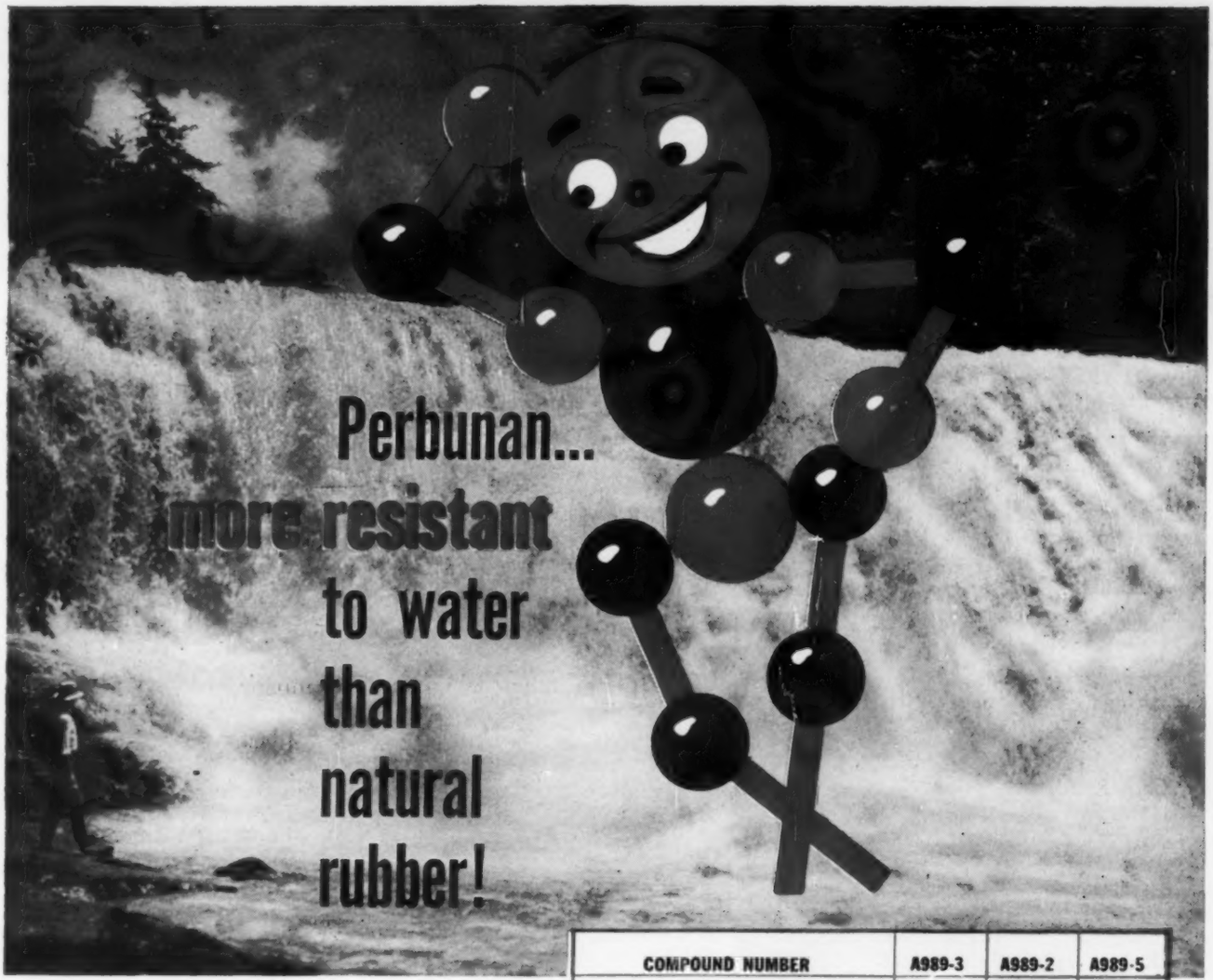

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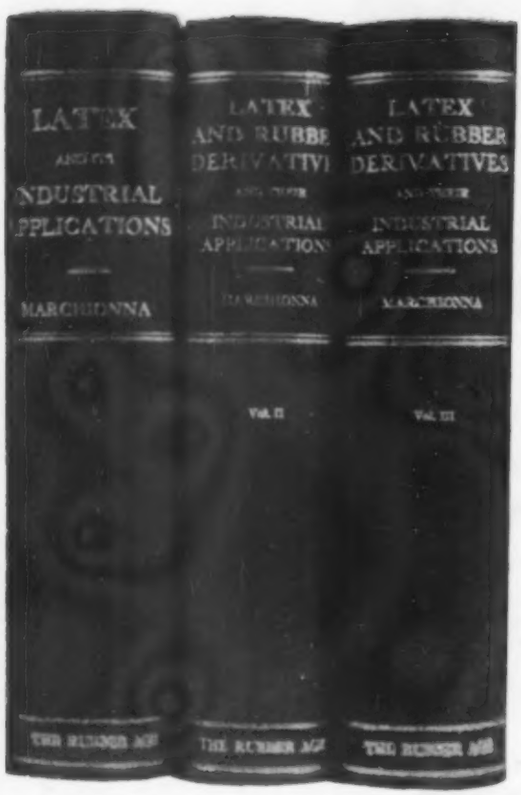

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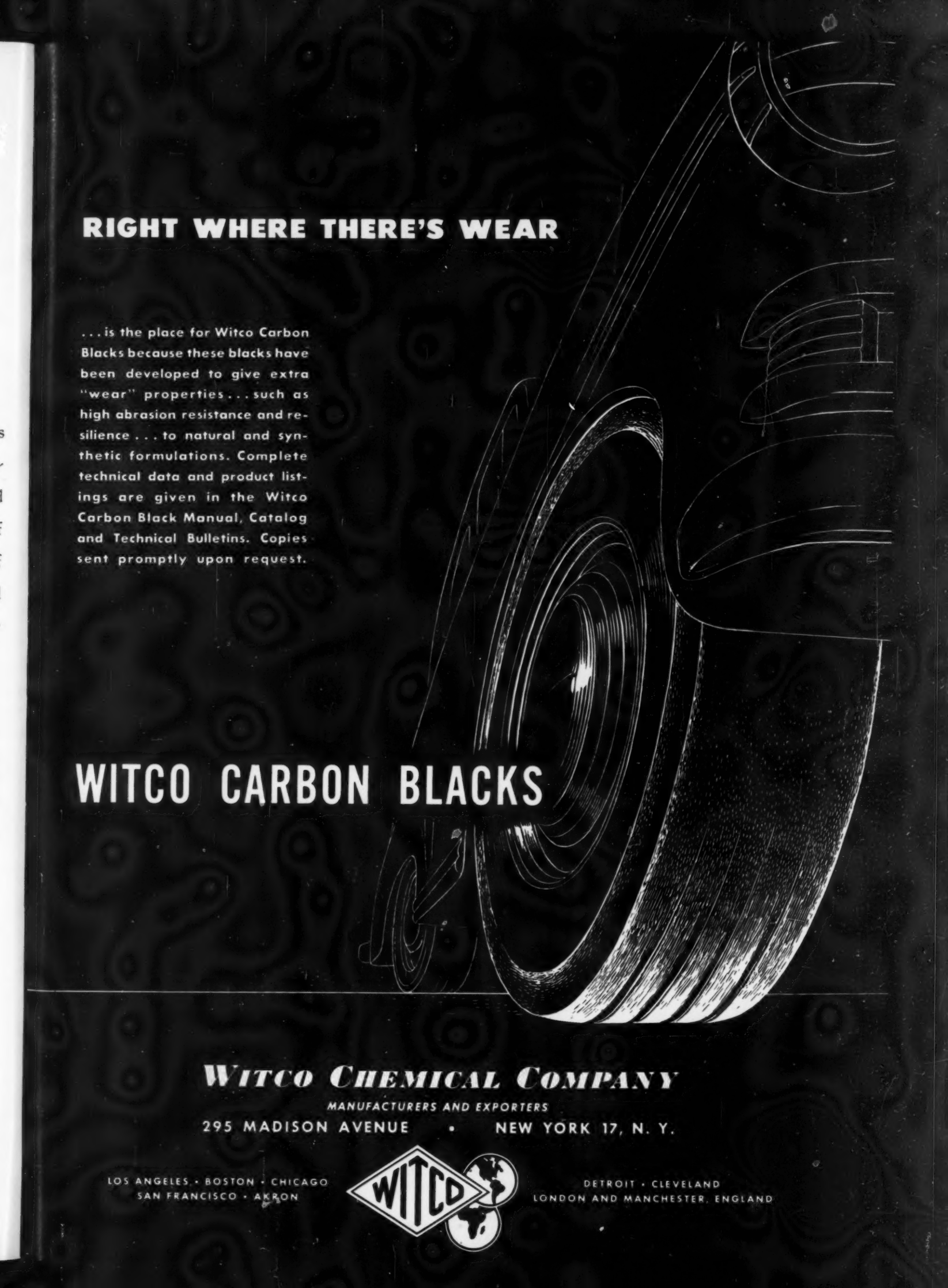

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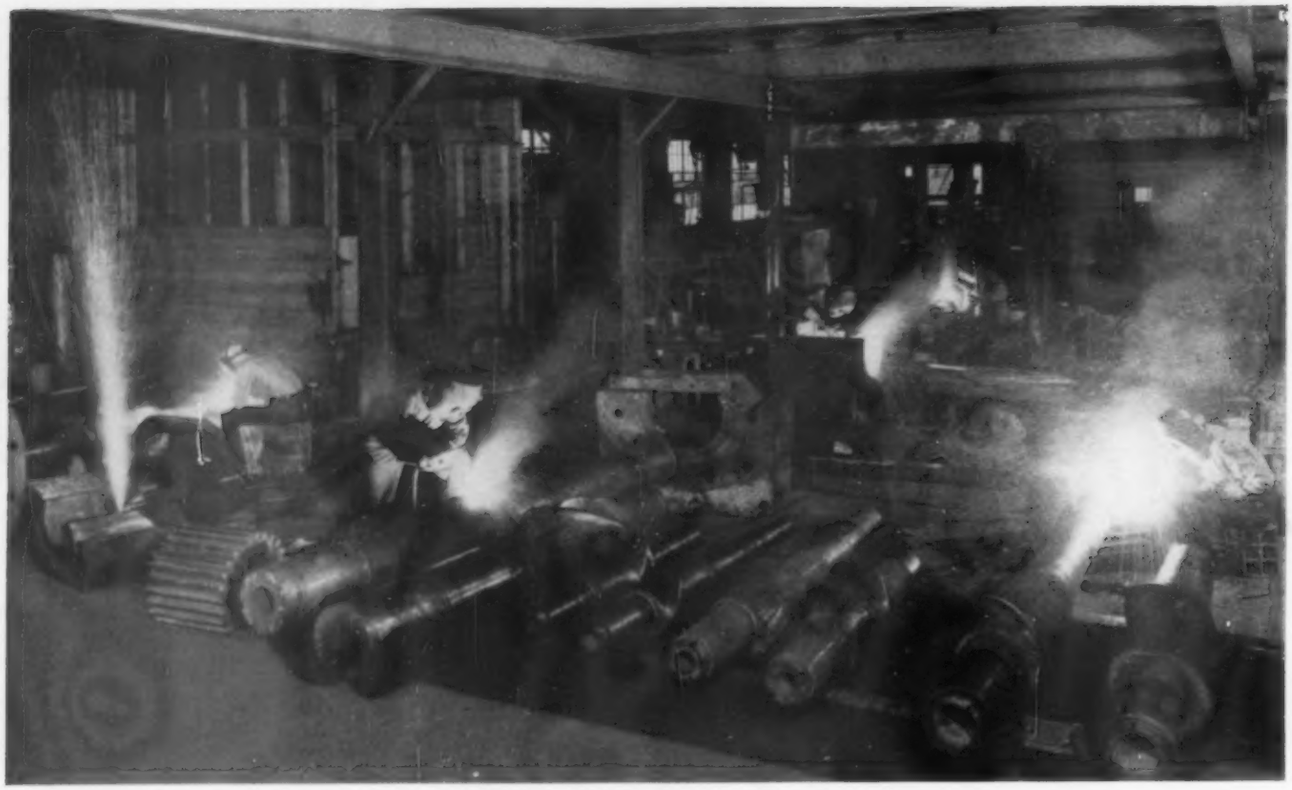

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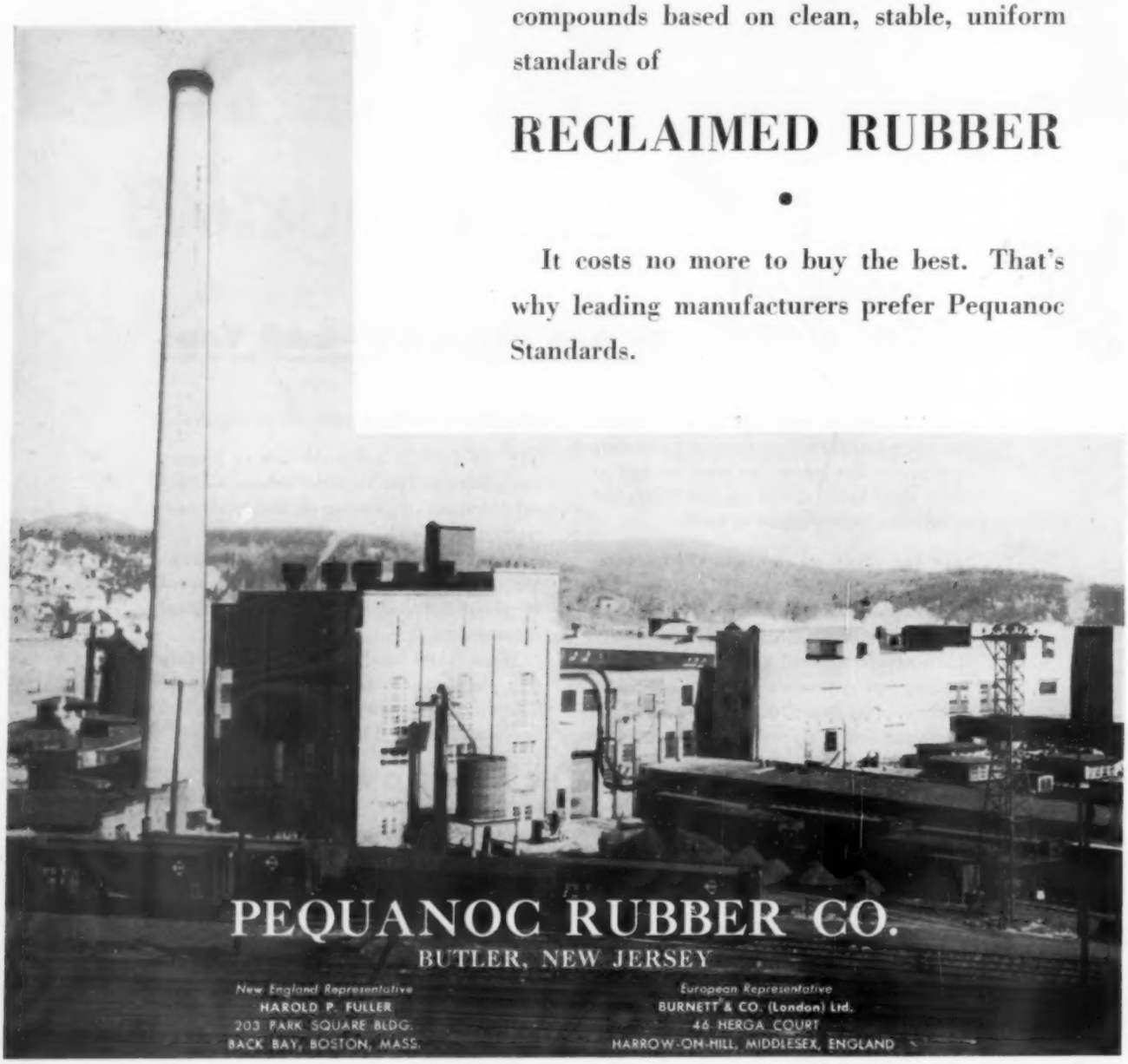

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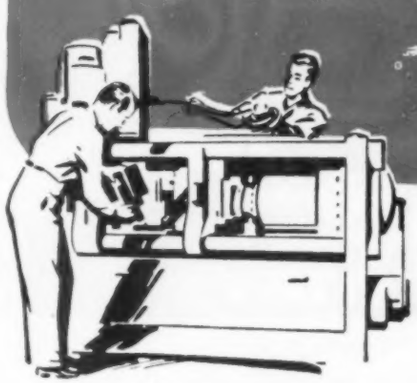

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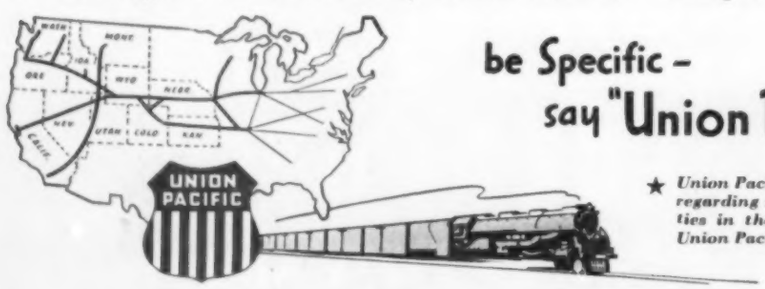

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ORIGINAL RESULTS

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			200%	300%	400%	500%			Room Temp.	100°C.
7.5	1470	840	260	405	520	705	.26	39	142	73
15	1850	685	335	520	780	1035	.26	44	99	85
30	1680	555	410	675	975	1340	.19	47	86	72
45	1565	495	510	800	1130	—	.15	49	92	71
60	1710	505	505	855	1200	1670	.17	49	84	51
90	1640	490	535	875	1220	—	.13	49	102	59

Time of Cure Min. at 45 Lb.	Goodyear-Healey Pendulum			Compression Fatigue (Goodrich Flexometer)*					Cut-Growth Resistance Tested at 70° C. Inches Failure
	Indentation in mm.	Per Cent Rebound	Shore Hardness	Per Cent Initial Comp.	Running Time and Per Cent Permanent Set	Max. Temp. Rise °C.	Dynamic Compression		
							Initial	Final	5,500 Cyc.
60	7.79	50.0	46	30.4	15'-5.5	21.1	18.9	22.5	.57

* Test Conditions: 143 lb. Load. 0.175" Stroke. 100° C. Oven Temp.

TECHNICAL Bulletin No. 24 featured "X-141" with a high loading of Zinc Oxide accelerated with MBT. The combination of "El-Sixty" with DPG develops excellent stress-strain properties—especially 300% modulus—with comparatively low set; the tear resistance, particularly at 100° C., is measurably higher than for most compounds with regular GR-S. The higher state of cure developed with the combination accelerator is reflected in improved rebound and notably low heat build-up. Cut-growth resistance is good.

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DPG	0.1
Coumarone-indene Resin	3.0
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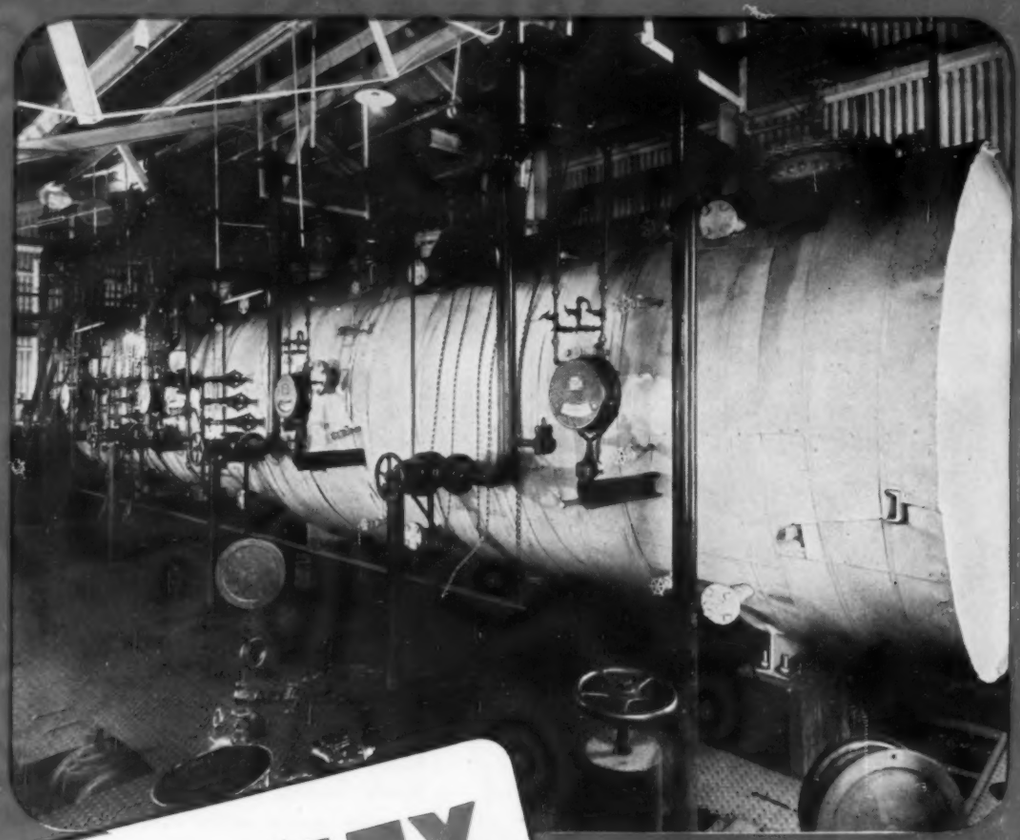

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Light Process Oil	283
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INDONEX 634½	409
INDONEX 638½	498
INDONEX 639½	506

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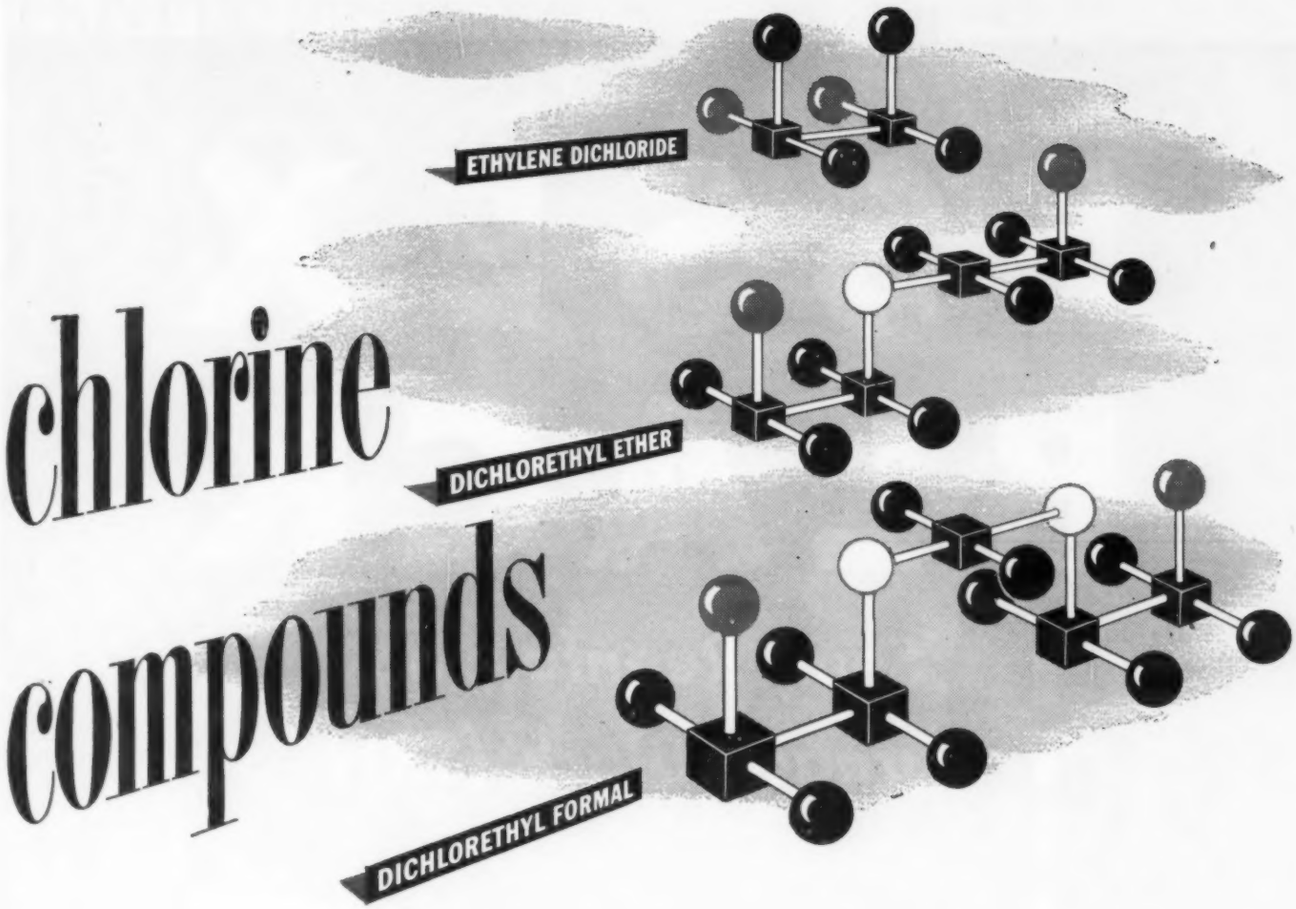

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RUBBER AGE

VOL. 59, No. 6 SEPTEMBER, 1946

Electrical Applications in the Rubber Industry

By J. Z. LINSENMEYER

Industry Engineer, Westinghouse Electric Corp., Pittsburgh, Penna.

ALTHOUGH the rubber industry utilizes all types of electrical equipment in its many phases of manufacture, this article will primarily cover motor and control equipment, and new electronic applications. We are all aware of the tremendous job accomplished by the rubber companies in their development of the synthetic program—a veritable creation of a complete new industry. While the establishment of the synthetic rubber plants posed many processing problems, it in general did not require special system layout or demand other than standard listed electrical equipment.

For the most part the drives consisted of standard general purpose squirrel cage type induction motors, and line starters. Due to the atmospheric conditions many of the motors and control were made totally enclosed explosion-proof. Although this type of enclosure has never been common to the rubber industry it is a standard for many applications in the chemical and petroleum industries. The processing of the synthetic rubber for the manufacturing of tires and other rubber products was accomplished on the same machines as used for the natural rubber. However, there were innumerable problems to be licked, and initially the processing time was very appreciably longer necessitating a tremendous expansion in rubber plant facilities and equipment in order to meet the war demands.

Note: This article is based upon a paper delivered by the author at the Summer Convention of the American Institute of Electrical Engineers, held in Detroit, Mich., June, 1946.

The greatest horsepower demand is on such equipment as mills, Banburys, and plasticators. The Banbury mixers and plasticators are essentially the same from the drive standpoint, that is, they are internal screw type mixers, the charge being dumped in at a hopper opening. There is consequently no hazard to the operator, and safety stopping is not required. Provision for reverse operation, generally to start after a jam or to adjust the machine, is required.

Plasticators have always been driven at constant speed, the motor speed usually being 600 or 720 RPM with a motor rating of approximately 700 HP. Many of the Banbury mixers have been driven at constant speed, but it has been found that under certain manufacturing conditions, a 2-speed drive is advantageous, and quite a number were put in service before and during the rubber expansion program.

In considering the drive for these machines comparison may first be made between the synchronous motor and the induction motor and their associated controls, and for the 2-speed Banbury mixer drive there are other arrangements as will be discussed.

Regardless of the type of motor used it should be designed for not less than 125% starting torque, because while the machines are normally started empty they may on occasion be required to start loaded. To adequately handle the high peak loads that occur it is customary practice to furnish approximately 250% pull-out-torque. The pull-in-torque for the synchronous motors is generally made 110%.

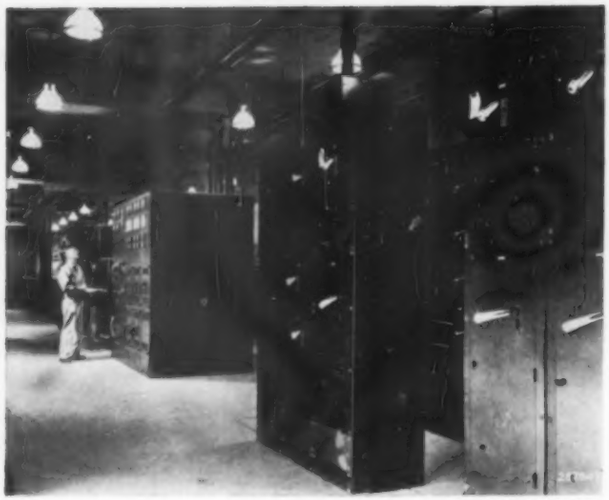


FIG. 1—View of controls and sub-station in a large synthetic rubber plant.

The 2-speed Banbury mixer drives, for the most part have been a 2 to 1 speed ratio usually 450/900 RPM single frame synchronous motors. Full voltage starting is standard, but in order to start with the minimum KVA the motors are always started on the low speed winding and then automatically transferred to high if the high button is pressed. Transfer from low to high or high to low speed may be obtained at any time by operation of the pushbutton without stopping the motor.

Another method of obtaining a 2-speed drive utilizes a single speed motor with a 2-speed gear, and it is thus possible to obtain speeds with less than a 2 to 1 ratio, as for instance, 150 and 200 RPM on the low speed shaft. However, it is necessary to stop the motor to change speeds, but if frequent changes are not required this is not considered a handicap.

If ratios of other than 2 to 1 are desired along with the ability to change speeds without stopping then a double winding induction type motor may be used. However, with a synchronous motor this is accomplished only by going to a double frame construction which, of course, essentially amounts to using two individual single speed synchronous motors coupled together. The various arrangement of drives available may be summarized as follows:

1. Synchronous or Induction Motor—Single speed with standard gear unit.
2. Synchronous or Induction Motor—Single speed with 2-speed gear unit.
3. Synchronous or Induction Motor — 2-speed (speed ratio of 2 to 1) single winding single frame with standard gear unit.
4. Induction Motor — 2-speed (speed ratio other than 2 to 1) double winding single frame with standard gear unit.
5. Synchronous Motor—2-speed (other than 2 to 1 speed ratio) double frame with standard gear unit.

The induction motor and control is nearly always cheaper than the synchronous, and the 2-speed control for the induction motor is considerably more simple than for the synchronous motor.

Differing from the Banbury mixers and the plasticators, mills are open type machines and present a hazard to the operator. Consequently their installation and operation has for many years come under the ruling of the National Safety Code for Rubber Mills. This code was prepared by the Rubber Section of the National Safety Council, and some states, especially New Jersey, have their own codes which are fully as strict as the National Code. Practically all of the larger rubber companies have safety engineers who, regardless of the code requirements, are interested in reducing hazards and accidents to a minimum for the good of the employees and the company.

Both the synchronous and the induction type motors have been used for mill drives, but the synchronous motor is the most common application—the main reason being its safety feature of dynamic braking.

The action of mechanical or magnetic brakes varies widely from day to day depending on their maintenance and adjustment. Plugging control either on synchronous or induction motors will reverse the motor if the zero speed switch fails for any reason, and may thus cause a more serious accident than the original one. Plugging control also is inoperative if the power fails, and depends upon the pulling in of a contactor. Consequently, this type of control is not favored for safety reasons, although for ordinary applications where the plugging operation is under the control of an operator it is entirely satisfactory.

The synchronous motor with dynamic braking control has the following advantageous features:

1. No tendency to reverse.
2. Dynamic braking obtained by spring closed switches independent of power supply.
3. Positive mechanical and electrical interlocking between line and dynamic braking contactors.

(Note: If motor generator or exciter set is driven from same AC supply, the stored energy of the set alone is sufficient to supply excitation for 1 or 2 seconds required for stopping in case of AC power failure.)

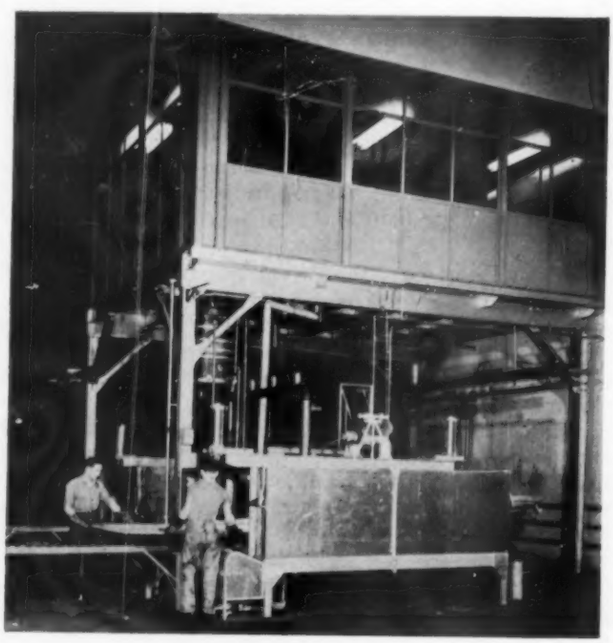


FIG. 2—Application of dielectric heating to production line curing of foam sponge rubber.

As a general summary of the Banbury, plasticator and mill drives it may be said that the safety feature of dynamic braking gives the synchronous motor a decided advantage on mill applications. If there are sufficient synchronous motor mill drives to establish a very good power factor then preference may be given to the induction motor on the Banbury mixer and plasticator drives because of the lower initial costs, and further along this line if it is permissible to stop the Banbury to change speed then a single speed motor and the 2-speed gear will offer the least expensive installation.

One of the troublesome problems brought out by the use of synthetic rubber resulted from the new types of carbon black required. The carbon black used with synthetic rubber was of much finer particle size, more adhesive and approximately one hundred times more conductive electrically than the lamp black used in the natural rubber process. Past maintenance practice of removing dirt from the winding by blowing out the motor was ineffective. Due to this higher conductivity there were several cases of serious flashovers on the standard type of synchronous motor which had been used in the rubber mill applications. To overcome this problem, special type field coils were designed for use on all rubber mill synchronous motors. The new design of coils use glass insulation, and all tapers, crevices or steps in the coil are filled with an especially suited cement. The complete coil is impregnated in a solventless varnish and gives a very smooth finish thus making it more difficult for the carbon black to adhere and accumulate on the coil.

Centralized Control

Fig. 1 shows a group of control centers and substation installed in one of the large synthetic plants. This unit design of control for individual motor starters was begun before the war to meet the demand for efficient centralized control, and adapted itself very well to the requirements of the new synthetic plants.

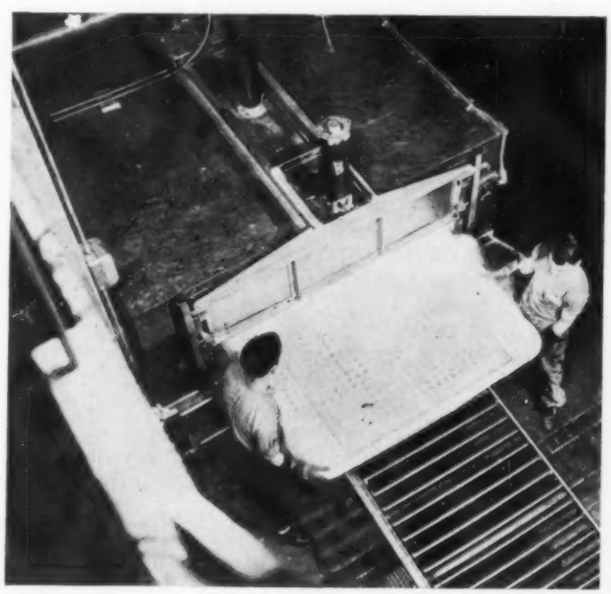


FIG. 3—Close-up of curing chamber in production of foam sponge mattresses.

FIG. 4—High-frequency oscillator in superstructure.

The basic unit is a prefabricated steel structure, and into this can be mounted the motor starting devices in any size up to and including NEMA size 4 starters. These structures can be installed singly or grouped into a control center. Placement of starters for a number of machines thus can be completely grouped and centralized, and can be arranged to make best possible use of available space. Units can be added, changed or removed quickly and easily at any future time. The insulation and wiring is simplified and the over-all cost consequently reduced.

The last few years have seen a tremendous development in the field of electronics. Unfortunately, electronics is not the miracle trouble cure-all that some of the publicity would seem to indicate but rather it is an excellent new tool suitable for numerous applications, where it will provide in many cases closer control than might otherwise be obtained.

Electronic control designed for operation in conjunction with a DC motor provides a stepless wide range of speed and with very good speed regulation. The speed adjustment is readily obtained by a potentiometer arranged in the grid circuit which changes the applied voltage to the motor. A current sensitive feed back circuit regulates closely to maintain the preset speed regardless of load changes. Current limit control provides smooth automatic acceleration to a preset speed. Units are now standardized in the lower HP ratings, and they have worked out very well on the small plastic tubers, on conveyors, tire building machines, and with special modifications of design they have successfully been applied on winders.

There are a number of miscellaneous applications as utilizing speed, torque, current or voltage regulators which give precision control. As for example edge controllers which are photoelectric devices used to regulate the position of a fabric such as that coming from a calender and being wound on a roll; also, loop regulators such as required for maintaining a uniform loop position of fabric or tread stock as it is carried along by the conveyor system or for a tensionless winder.

One of the new and vitally important developments is the use of high frequency heating. It is hard to say whether its development was accelerated or retarded by the war effort — certain phases of this work were pushed forward at a great speed while the development of other industrial applications was somewhat retarded.

However, since first given consideration by the rubber industry it has made tremendous stride, and no summary of electrical applications would be complete without brief mention of this new tool.

Frequencies from 60 to 15000 cycles per second are normally produced by rotating machines. This range covers most commercial applications for heat treating, melting and annealing of metals. The higher frequencies from 15000 to 50 megacycles are produced by electronic generators.

In the industrial application of high frequency heating the two methods used, induction and dielectric, should not be confused. Though both have technical similarities, their applications are entirely dissimilar. Induction heating uses high frequency to heat metals or other good conductors of electricity. Dielectric heating uses high frequencies to heat non-conducting materials or material of a very high resistance. It is the latter form of heating that is of primary interest to the rubber industry.

As defined briefly, dielectric heating is the placing of a non-conducting material in an alternating electrostatic field—accomplished simply by placing the material to be heated between two plates so that the whole represents an electrical capacitor made up of the two electrodes with the material between.

When an alternating voltage is placed across the two electrodes one electrode assumes a positive charge and the other a negative charge at any given instant and the electrostatic field between these two plates causes a deformation of the molecular structure in the rubber. Particles making up the molecular structure contain electric charges and therefore they have an electrical force exerted upon them by the electric field. When the polarity in the two plates is reversed by the action of the alternating voltage, the molecular structure is then deformed in the opposite direction. This results in molecular stress or friction in the rubber, and as the charge on the plates is rapidly reversed the effect of this friction is increased, and appears in the form of heat generated uniformly throughout the material. It is this feature of producing heat uniformly throughout the material that gives dielectric heating many of its advantages.

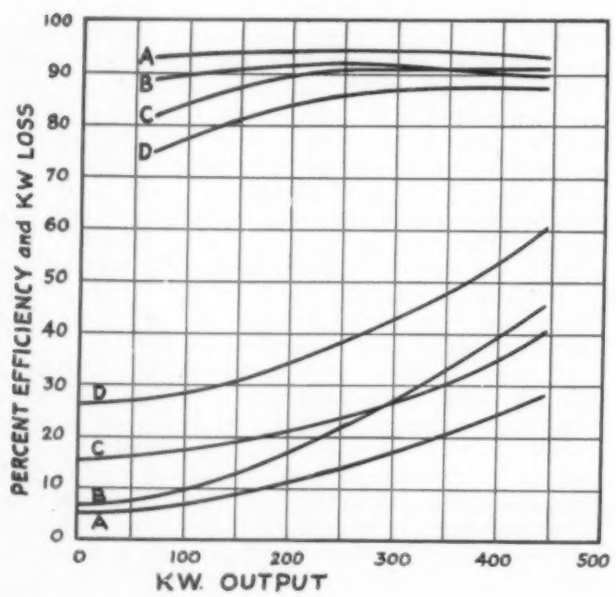


FIG. 5—These curves show the efficiency and losses of three types of conversion equipment when operated under different percentages of load. Conversion Equipment: A—600 volt ignitron rectifier; B—275 volt ignitron rectifier; C—synchronous converter; D—motor generator set.

Dielectric heating now being used in the curing of compounded rubber stock has greatly increased production. As examples: The curing of truck and caster wheels molded in a multi-cavity steam heated press required 3 hours. The introduction of a two minute preheating of the preforms prior to putting in the press reduced the steam cure time to 40 minutes. Rubber brake blocks when preheated with high frequency reduced press curing time from 1 hour to 15 minutes.

One of the larger rubber companies has made a very interesting application of dielectric heating to production line curing of sponge rubber. In this process the rubber latex mixture is poured into a mold made of an insulating material and the filled mold is delivered into the curing chamber by a conveyor. Fig. 2 shows the complete installation. Fig. 3 shows a close-up of one of the curing chambers containing the electrodes which are connected to the high frequency oscillator arranged in the superstructure, as shown in Fig. 4.

This installation not only reduced the curing time of large foam rubber mattresses from 60 minutes to 5 minutes but permitted making the mattress in a single piece. With the steam oven curing method it was necessary to make the mattress in three separate sections, and after each was cured the three sections had to be cemented together to form the complete mattress.

The use of dielectric heating has had a very ambitious start in the rubber industry, but there is a great deal yet to be learned, and a vast amount of experimental work will be necessary to fully develop all of its possible uses. A large share of the burden of this development of necessity will fall on the shoulders of the rubber industry people. This is basically so because so many of these problems involve a question of quality and only those versed in the technology of rubber can possibly evaluate the gains produced by the use of radio frequency heating.

D.C. Power Supply

Practically all of the rubber companies use DC power for various drives requiring speed adjustment, such as calenders and tubers. To obtain direct current a conversion device usually must be used, since almost all modern power systems are designed to supply alternating current.

The most common practice has been to use motor generator sets or synchronous converters for the plant DC supply. Comparatively recently the Ignitron type of mercury arc rectifier has assumed a prominent position. Since there are these several types of conversion equipment, each having its advantages and limitations, selecting the one best suited requires a study of several factors.

The motor generator set provides a DC output which is more or less independent of variations in the AC supply; consequently, voltage regulation and adjustment are very simple and inexpensive. The efficiency of the motor generator set is comparatively low because of the electrical to mechanical to electrical power

conversion and the rotational losses of the two machines. Starting current on the AC motor is high and in many cases it is necessary to take special precaution to limit it on large units. Momentary overload capacity is determined by commutation limits and usually is limited to 200%.

The synchronous converter is both motor and generator combined in a single armature winding. At one end is a commutator same as for a DC generator and the other end is provided with collector rings. The DC voltage output is the direct function of the impressed alternating voltage, consequently fluctuations in the supply voltage are directly reflected in the DC output. Its efficiency is better than that of the motor generator set. Overload capacity is determined by commutation limits of DC and 200% momentary load is about the maximum. The commutator and collector rings, brushes and bearings require maintenance similar to that of a DC machine of like size.

First used in 1937 the Ignitron rectifier introduced a basic new principle in the utilization of the rectifying property of mercury vapor arc which greatly increases the efficiency. The Ignitron requires less space than other conversion units, it is lighter in weight and as such requires no special foundation. Because of its unit type construction it may be readily moved and installed in any desired location. Also, it may readily be paralleled with other conversion units.

These factors may offer considerable advantage in considering an addition to an existing plant. The voltage output is directly dependent upon the AC supply as in the case of the synchronous converter but regulators are furnished as standard equipment. Its efficiency as shown on these comparative curves in Fig. 5 is just a little better than the synchronous converter at 275 volts, but at the higher voltage the efficiency is increased. It has a very high overload capacity—even momentary short circuit will not injure the equipment. The maintenance costs are practically negligible because it has no commutator, brushes, collector rings or bearings to be maintained and replaced.

Range Drives

For some time there has been a trend toward more continuous process lines using direct current motor drives with various regulating devices to provide close process control. Such equipment as tuber tread stock conveyers, bias cutters, web fabric or cord latex dip machines, and calender processing lines are in this category. This equipment is in general required to operate over quite a wide speed range to accommodate all of the various grades and weights of stock that may be run. The direct current motor is unequaled for flexibility of speed control and it is of interest to note that contrary to the general impression more direct current motors are being built today than ever before.

Most of the processing machinery mentioned involves several units or sections which must operate in synchronous relation. The fundamental arrangement of the well known adjustable voltage system (Ward Leonard) which utilizes a DC generator to supply all of the motors required to drive the various individual sections offers a very effective arrangement.

By varying the generator voltage the speeds of all of the motors may be changed simultaneously and proportionately. In addition individual speed adjustment of each motor independent of the rest of the system may be accomplished by varying the motor field excitation by means of a rheostat or other regulating device. There is no limit as to the number or size of motors that may be used in the system.

FIG. 6—Installation view from wind-up end toward front of machine for web fabric processing.

While the fundamental scheme and arrangement of this type of drive is similar for different applications —each must be made more or less special to meet the requirements deemed most desirable by the operating engineers and the production facilities peculiar to each factory.

One of the larger range drives is that of the latex dip or web fabric processing machine. Quite a number of new machines of this type were added during the war for processing of the rayon and cotton cords used in the manufacturing of synthetic rubber tires. This is not a new process, and a number of such machines have been in operation for some time. However, the majority have been driven by a single motor with line shafting and take offs through mechanical speed changers to provide relative adjustments between sections.

Arrangement for One Installation

The arrangement used for one particular installation of adjustable voltage drive was as follows: The tire cords (several thousand) were taken from individual spools mounted on a creel rack, or unwound from a beam in which case there are cross threads spaced approximately an inch apart. The cords drawn over the let-off rolls are pulled through a bath where they are thoroughly saturated with a latex solution. They then must be carried over a series of three large steam heated drying drums—through a booster hot air dryer, a series of smaller dry cans and then onto the wind-up stand.

Eight motors are used—one for the let-off rolls, one for each of the large dryer drums, the hot air dryer, each set of the smaller dry cans, and finally the wind-

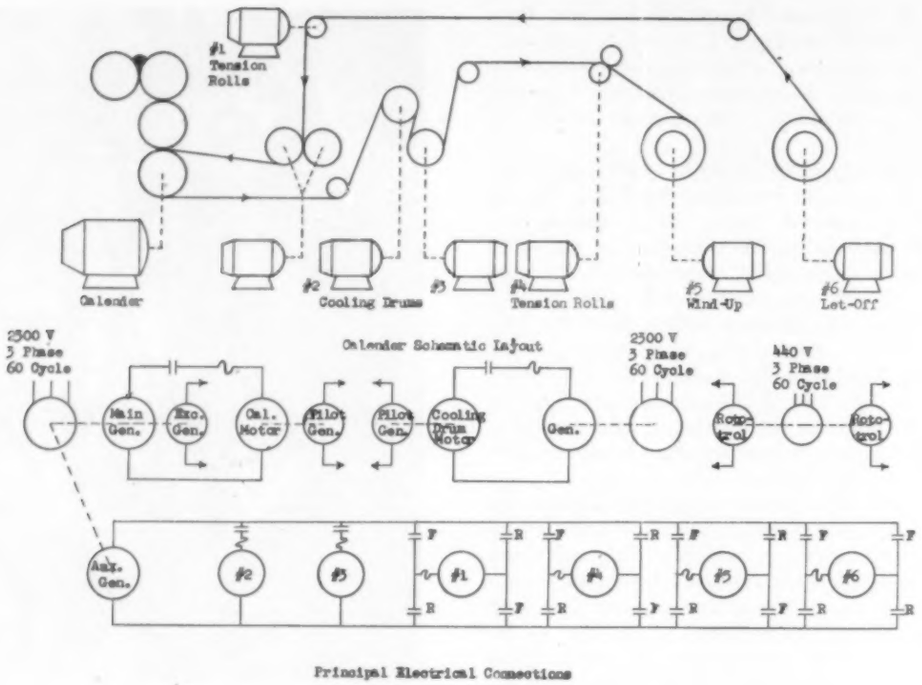


FIG. 6—Schematic layout of a calender drive used for both rubber fabric and Vinylite film.

up. They are powered from a DC generator arranged in an adjustable voltage system and provide a production range of 10 to 50 YPM and a creeping speed of approximately 5 YPM.

The motor on the let-off functions as a generator acting to hold back and thus maintain a constant tension pull back. The No. 1 drying drum motor acts as the lead motor and the rest of the motors are synchronized to match by means of dancer rheostats arranged in the field circuit of each motor. The automatic regulation of the all-electric drive with its ability to maintain proper tension has greatly benefited production in reducing to a minimum the loss due to shrinkage, and the maintenance of the proper width at the wind-up.

Fig. 6 shows a view of an installation looking from the wind-up end of the machine toward the front. The DC gearmotor drives for several of the sections may be noted.

Calender Process Lines

Recently considerable attention has been given to calendering and there has been a demand for much closer speed regulation than formerly required, due in part to the development of the finer plastic films.

For many years the accepted calender drive has consisted of a standard tapered rated adjustable (field control) speed motor operating from the plant voltage which may be single or double voltage usually 115/230 volts. Generally speaking where a double voltage supply is available 2 to 1 field control motors have been used which permits of a total operating range of 4 to 1. On single voltage it is usual to use 3 or 4 to 1 field control motor. Such motors have a regulation of 15 percent no load to full load, and this was quite acceptable. Now it is not uncommon to receive specifications calling for the speed to be held better than 1 percent regardless of load variations.

Fig. 7 shows a schematic layout of a calender drive used for both rubber fabric and Vinylite film. The fabric is unwound from the let-off roll over a pair of tension rolls over a set of warming drums through the calender where the rubber stock is applied; then on to the cooling drums, the second set of tension rolls and the wind-up. When used for the production of Vinylite film the let-off and tensioning drives are not used.

The calender drive operates over a speed range from 90 to 450 RPM by adjustable voltage control at full field and from 450 to 900 RPM at rated voltage by means of field control, thus providing a total speed range of 10 to 1. The auxiliary drives operate in train (all by armature voltage control) over the same speed range as the calender.

The let-off and wind-up drives are controlled by a Rototrol which maintains constant tension throughout the change from full to empty and empty to full reel respectively. The tension roll drives are also Rototrol regulated to provide constant tension as the fabric enters the calender and as delivered to the wind-up.

When the Vinylite leaves the calender it is unable to stand any appreciable tension. Therefore, in order to maintain the proper gauge it is necessary that the cooling drums be very closely regulated to match their speed with that of the calender. To accomplish this two pilot generators are used, one driven by the calender motor, and one by the cooling drum motor.

The pilot on the calender motor supplies excitation to one field of a Rototrol. A second field on the Rototrol is excited from a constant potential source. Any change in speed of the calender motor is reflected in the output of the pilot generator and hence the field of the Rototrol. The Rototrol is arranged to excite the generator field and when any speed variations occur it immediately restores the calender motor to its preset speed.

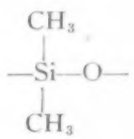
Some Properties and Applications of Silicone Rubber

By J. MARSDEN

Research Laboratory, General Electric Co., Schenectady, N. Y.

SILICONE rubber is the youngest member of the silicone family developed through General Electric chemical research. While possessing many of the physical properties of other elastomers, both natural and synthetic, it is entirely different in its chemical nature.

Elastic substances are composed of long-chain, linear polymeric molecules, each of which consists of groups of atoms—units—arranged in a repetitive manner. In one type of silicone rubber the building unit is



dimethyl silicone. In natural and most synthetic rubbers the "backbone" of the polymeric molecule consists of long carbon chains. Such molecules are attacked by the combination of heat and air so that they deteriorate rapidly at temperatures in excess of 300°F.

The silicone rubber polymer is quite different in its molecular structure. The "backbone" consists of alternate silicon and oxygen atoms with two methyl groups ($—CH_3$) attached to each silicon atom. This basic structure is responsible for the remarkable thermal stability of silicone rubber. Silica (quartz) bears a definite resemblance to silicone rubber; quartz has the same "backbone" or polymeric chain of silicon and oxygen atoms joined together, but here the chains are linked by oxygen bridges and a rigid body results. Actually, when silicone rubber is burned—it does burn although with difficulty—very fine silica is formed.

Special Vulcanizing Method

In order to prevent flow under heat, pressure, or both, all rubbers are vulcanized, i.e., cross linked. Unlike other rubbers, a methyl silicone polymer has no chemical unsaturation and so the conventional methods of vulcanizing with sulfur have not been possible. Other methods have been found.

The polymeric silicone gum may be compounded with most fillers used in the rubber industry. In all cases where silicone rubber is referred to the term is used exclusively to cover a silicone gum compounded with a filler or fillers and vulcanized.

Silicone rubber is processed on standard rubber equipment. It may be extruded in a standard continuous extrusion machine, and molded and vulcanized in a steam heated press.

Properties of Silicone Rubber

The properties of silicone rubber depend to a large extent on the type of reinforcing filler and degree of vulcanization. The best properties possessed by several types follow:

Heat Resistance: In common with all silicone products this rubber possesses outstanding stability when heated in air at high temperatures. In this respect, compared to other rubbers, silicone rubber is in a class by itself. It retains rubber-like characteristics after aging for three to four months at 400°F. and even after aging for thirty-six to forty-eight hours at 575°F. Long term aging tests at 300°F. have been made on thin sheet stock (100 mils) under very drastic conditions—in an air-circulating oven where the surface-volume ratio of the rubber exposed to the air was high. Under these conditions the rubber slowly hardened but showed no surface cracking.

On heating for one year a silicone rubber sheet increased in hardness from 45 to 75. After this aging the rubber still possessed some flexibility but not sufficient to allow winding around a rod of the same diameter as the thickness of the specimen. After aging a sheet of Buna S for 35 hours at 300°F., the surface was hard and nonflexible so that surface cracks occurred on bending.

Silicone rubber can be extruded in a standard continuous extrusion machine.

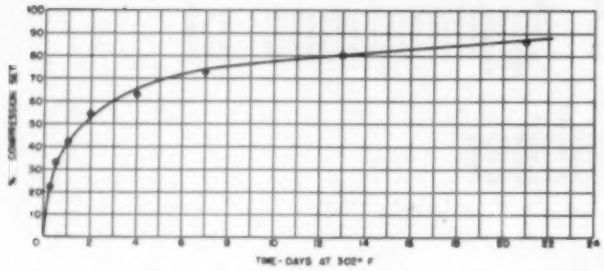


Fig. 1—Percentage change in compression set with time

Low-Temperature Characteristics: Low-temperature measurements were made on sheet stock approximately 100 mils thick. The rubbers were immersed in a CO_2-acetone bath, the temperature of which was gradually reduced. The temperature of the thermostat was held constant for approximately 15 minutes, and the samples were examined at approximately 9°F. intervals. From room temperature down to minus 82°F. no appreciable change in flexibility occurs. From minus 82°F. to minus 90°F. the flexibility of the rubber decreases and at the latter temperature is somewhat stiff and dead but not brittle in the usual sense of the term.

If silicone rubber is first cooled in solid carbon dioxide (minus 108°F.) where it is stiff and dead, it remains so as the temperature is gradually raised to minus 64°F. At this temperature the rubber gradually becomes more flexible up to minus 52°F. and at the latter temperature is practically as flexible as it is at room temperature.

These rubbers contain no added plasticizers, the addition of which is the method usually employed with other elastomers to improve low-temperature characteristics. Based on present experience, silicone rubber retains flexibility at lower temperatures than other known rubber-like materials.

Hardness: Silicone rubber may be made in any desired hardness over the range 25 to 80 as measured with a Shore "A" Durometer. The harder rubbers have slightly less tear resistance and higher modulus with relatively small maximum elongation. A silicone rubber with the most desirable properties from most points of view is one with a hardness of 45 to 60.

It was pointed out that the flexibility of this rubber changed only slightly over a considerable range from room temperature downwards. This is equally true on the other side of the temperature scale, from room temperature to 392°F., the highest temperature at which measurements have been made. By determining compressibility of these rubbers at various temperatures under different loads and by correlating these compressibility measurements with Shore "A" hardness values, it has been shown that a rubber with a hardness of 40 at 77°F. decreases to only 37 at 392°F. Observations at higher temperatures up to 572°F. indicate that little change occurs in hardness, flexibility, modulus and related properties.

The slight change in hardness and flexibility of silicone rubber over the temperature range of minus 55°F. to 572°F. is duplicated by no other elastomeric materials. The low temperature coefficient of hardness and flexibility of silicone rubber is the result of an inherent property of silicone polymers and is analogous to the low temperature coefficient of viscosity of silicone oils.*

Compression Set: The compression set under constant deflection has been measured following a modification of the A.S.T.M. method D395-40T. The following test procedure was used for evaluating the compression set of various types of silicone rubber: Standard size plugs are compressed 30 per cent between plates and heated for six hours at 302°F. The clamp assembly is cooled to room temperature, the plug is removed and the thickness is measured one hour after removal.

The compression set may be calculated in two ways, either by A.S.T.M. D395-37T Method B or by D395-40T Revised Method B. The latter method was used and results are calculated on this basis. Values of 15-25 per cent compression set are obtained for rubbers ranging in hardness (Shore "A" Durometer) from 25 to 80. Fig. 1 shows the effect of time of compression on the compression set of a silicone rubber with a hardness of 55. Fig. 2 shows the effect of temperature on the compression set characteristics when the test samples were heated for sixteen hours under compression.

Tests also were made following the standard procedure (D395-37T), i.e., the rubber when compressed is heated at 158°F. Under these conditions comparable values of compression set (8-10 per cent) to those of a natural rubber stock designed for this property are obtained.

Tensile Strength: The tensile strength of silicone rubber is lower than that of most other rubbers. A probability plot of a number of measurements shows that the most probable value of the tensile strength at break for a silicone rubber is 650 p.s.i. with a minimum and maximum deviation of 110 p.s.i.; the maximum elongation varies between 100 and 300 per cent.

Tear resistance of most of these silicone rubbers is relatively poor compared to other rubbers. Textiles, both organic and inorganic, may be incorporated with the rubbers to enhance tear qualities. Naturally, inorganic textiles are used where it is desired to preserve the usefulness of silicone rubbers as far as high temperature operation is concerned.

Chemical Resistance: The resistance of silicone rub-

* Comparative Study of G-E Silicone Oils and Petroleum Oils in Hydraulic Applications (RIM-30). A pamphlet issued by the Resin and Insulation Materials Division, Chemical Department, General Electric Co.

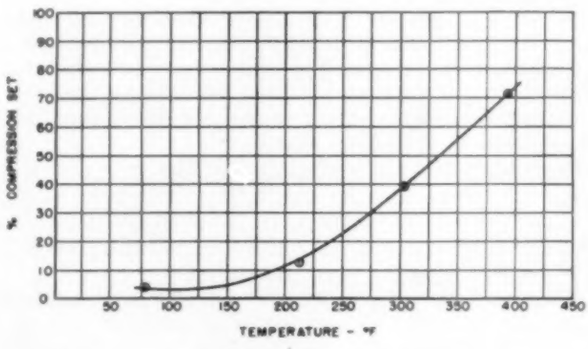


Fig. 2—Percentage change in compression set with temperature (Deg. F), after 16 hours in compressed condition.

ber to swelling and deterioration has been measured in relatively few solvents. The data are insufficient to permit rigid generalizations based on the chemical structure of a particular solvent and consequently tentative generalizations made below should be considered only as an indication of possible behavior.

The rubber deteriorates rather rapidly in contact with strong acids and alkali. Hydrocarbons cause considerable swelling, aromatic hydrocarbons having a greater effect. Polar compounds such as alcohols, phenols, chlorinated compounds and nitro compounds exert a minimum swelling action on the rubber.

Only limited data are available on oil resistance. A 35 per cent increase in volume of the rubber occurs after immersion in a mineral oil* (—100 Saybolt secs. at 100°F.) for fourteen days at 100°F. at which time maximum swelling has occurred. Recently a sample of G-E silicone rubber was tested in a Bunker C oil at relatively high temperatures (400°F.) without deleterious effect of the oil on the rubber.

Adhesive Properties: When metal inserts are molded in a silicone rubber article, relatively little sticking of the rubber to the metal occurs. This is not too surprising in view of the chemical inertness of the rubber. Special techniques will have to be developed for bonding silicone rubbers to metals. Development work is now in progress.

Noncorrosive Properties: This rubber in contact with metals has no corrosive action because of its chemical inertness and because it contains no added ingredients, such as sulfur-containing vulcanizing agents, which cause corrosion.

Electrical Properties: All the electrical data included here were obtained with a silicone rubber containing silica as the filler.

The dielectric constant as a function of frequency of this silicone rubber at 25°C. and 100°C., and after conditioning the rubber for three days at 100 per cent relative humidity, is shown in Fig. 3. The decrease in dielectric constant on increasing the temperature from 25°C. to 100°C. is caused by a change in density. The dielectric constant of this rubber is only slightly higher after conditioning in 100 per cent relative humidity at 25°C. for three days.

Loss factor (E) data at various frequencies are

* Used in cables and transformers.

† Increase in weight after three days at 100% relative humidity = 0.35%.

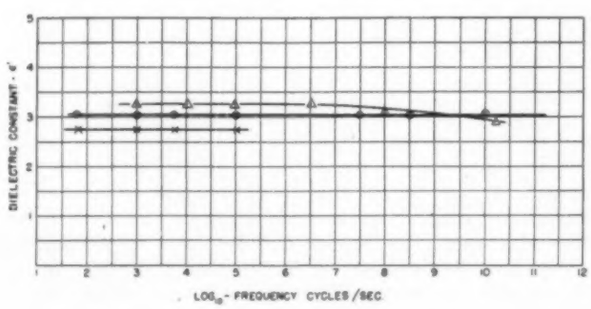


Fig. 3—Silicone rubber dielectric constant (ε') as a function of frequency
○ — at 77F.
× — at 212F.
△ — at 77F. after 3 days at 100 per cent relative humidity

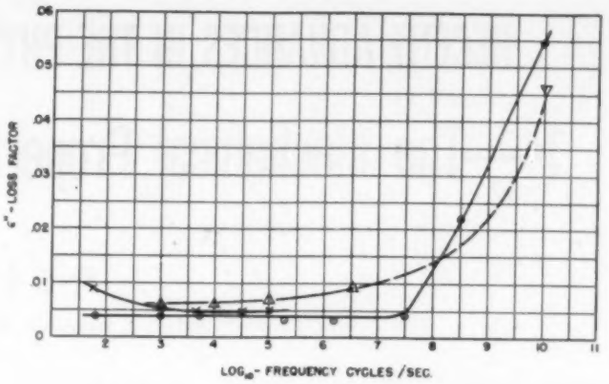


Fig. 4—Silicone rubber loss factor (ε") as a function of frequency
○ — at 77F.
× — at 212F.
△ — at 77F. after 3 days at 100 per cent relative humidity

shown in Fig. 4. The loss factor at 100°C. is only slightly greater than the values obtained at 25°C. over the frequency range measured. In general, the loss factor of the "wet" sample† is only slightly higher than the "dry" sample.

Dielectric strength measurements were made on a silica-filled silicone rubber sheet approximately 75 mils thick. An average value of 595 volts/mil with a maximum and minimum value of 638 and 530 volts/mil respectively were obtained.

The electrical data for silicone rubber indicate its usefulness as electrical insulation over a wide frequency range.

Ozone and Corona Resistance: Silicone rubber is highly resistant to ozone and corona conditions. A stretched sheet of silicone rubber showed no cracking after twenty-four hours in an atmosphere containing 0.01 per cent ozone. A Buna S rubber in the same atmosphere for a few minutes developed surface cracks. These properties coupled with the electrical properties make silicone rubber an important electrical insulating material.

Applications of Silicone Rubber

The property of low compression set at elevated temperatures coupled with the heat resistance of the rubber makes it a desirable gasket material for high temperature operation. Most of the applications to date take full advantage of these properties, including: gaskets for turbo-superchargers, Naval searchlights and signal lights, chemical manufacturing equipment and electrical apparatus. The superior ozone resistance and chemical resistance properties are taken advantage of in some applications where the high temperature properties are not a necessity. Results indicate that the silicone rubber is useful in applications where low temperature flexibility and lack of corrosive action is a prime requisite.

CORRECTION

Our attention has been called to an error in the legends beneath Figures 1 and 2 in the article "Early Studies on the Fractionation of Rubber" by Henry P. Stevens which appeared in our June, 1946, issue, as follows: I—Original rubber untreated, should be II; II—Original rubber swollen, should be III; III—Bottom layer containing nitrogen, should be I.

RECENT ADVANCES IN THE PHYSICS AND CHEMISTRY OF RUBBER

1—The Mechanical Properties of Highly-Elastic Materials

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For the past few years members of the staff of the British Rubber Producers' Research Association have been giving a series of lectures at various institutions throughout England summarizing in popular form research developments at the Association's laboratories in Welwyn Garden City, Hertfordshire, England. During the winter of 1945-46 a total of seven lectures were delivered at the Leicester Technical College, at Birmingham University, and at the Newton Heath Technical School. All seven of these lectures, which are popular versions of the results of research work published elsewhere, will be published in RUBBER AGE, under the general title "Recent Advances in the Physics and Chemistry of Rubber." The first of these lectures appears herewith.

IN a previous lecture *(1)* I have dealt with the fundamental concepts of elasticity and the basic physical properties of rubber-like materials from the standpoint of their molecular constitution. In the present lecture an attempt will be made to develop in rather more detail the theory of the elastic properties of vulcanized rubber, considered as a three-dimensional network of long-chain molecules, and to show that this theory provides a firm basis for the growth of a new branch of engineering—*the mechanics of large elastic deformations.*

There already exists a very complete and well-established theory of elasticity for small deformations which was developed during the last century, and has found an increasing field of application in engineering and in a variety of physical problems. This theory has become so much a part of the philosophy of physical science that it is accepted nowadays almost as an all-embracing doctrine of the fundamental properties of matter. Indeed, it requires a certain effort to trace it to its origins, and to enquire into the conditions in which it arose, and the limitations within which it is confined. When this effort is made, we find that it is based essentially on two fundamental experimental observations, namely:

(1) *Hooke's Law,* originally proposed in 1679, which states that the stress required to produce a given strain is directly proportional to the strain, and

(2) *The principle of superposition,* according to which the strain produced by a number of stresses acting simultaneously is obtained simply by adding up the strains produced by each of the stresses acting independently.

These two principles are generally valid for hard solids (e.g., crystals or glasses) in which the deformations are never large, and may generally be assumed not to exceed 1% of the linear dimensions of the body. It should be noted, in passing, that Hooke's Law is really a special case of the principle of superposition, so that fundamentally only one principle is involved in the classical theory of elasticity.

When we come to materials like rubber, which are capable of relatively enormous deformations, the principle of superposition breaks down completely. This is known experimentally for rubber (which does not follow Hooke's Law in a simple extension), but is really an essential consequence of the magnitude of the deformations, as has been shown by Mooney *(2)*. We must therefore find an entirely new basis for the description of the mechanical properties of highly-deformable elastic materials.

Before discussing this new basis, it may be well to consider briefly what is required of a theory of elasticity in general. The problem which confronts the engineer is this: given a body of any shape to which an arbitrary set of stresses are applied, how may the corresponding deformations at all points of the body be calculated? Or, alternatively, given the strains at all points of a body, how may the stresses required to produce these strains be calculated?

For the case when the strains are small, the classical theory of elasticity provides a complete answer to these questions. The detailed calculations may be extremely complicated but a solution is always possible in principle. What is required is a theory which will provide a solution to such problems when the deformations are no longer small.

If a body is subjected to an arbitrary system of stresses, the strains will in general vary from point to point. We may simplify our general problem by considering the whole body to be made up of a number of small regions, over each of which the strain is sensibly uniform or homogeneous. If we can solve the problem for a homogeneous strain no new principle will be involved in extending the solution to the more general case.

In the most general type of homogeneous strain it is possible to choose a cube in the unstrained material in such a way that this becomes a rectangular block in the strained state. [Fig. 1 (a) and (b)]. It will be seen that the strained state may be produced by altering the lengths of the edges of the cube in three different ratios (say λ_1, λ_2 and λ_3), and then rotating the resulting rectangular block through a certain angle. The rotation will not affect the stresses on the faces of the block, nor the energy stored elastically within it; these quantities are determined only by its shape. Hence we may neglect the rotation and consider only

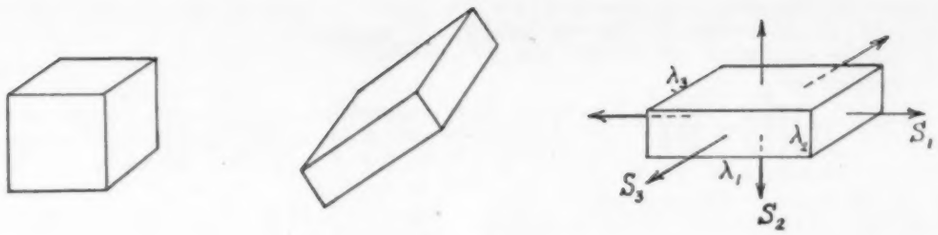

Figure 1.

(a) Unstrained state (b) Homogeneous strain (c) Pure homogeneous strain

the case where the edges of the block are parallel to the edges of the original cube, as in Fig. 1 (c). A deformation of this kind is called a *pure homogeneous strain.*

It follows from considerations of symmetry that if the material in the unstrained state is isotropic, i.e., if it has the same properties in all directions, a state of pure homogeneous strain can be maintained by a set of three stresses normal to faces of the rectangular block in Fig. 1 (c). Moreover, if these three *principal stresses* are known, then the forces acting across any other plane in the body can always be determined.

We see, then, that the general problem of the elastically strained body may be reduced to the very much simpler problem of a body subjected to pure homogeneous strain.

This is as far as we can go by purely mathematical reasoning. To proceed further it is necessary to introduce a physical law connecting the principal stresses with the principal strains.

Theory of Molecular Network

The discovery of the fundamental general law relating the stresses and strains in an "ideal" rubber was originally made by the author *(3)*, by a slight extension of the method worked out by Wall *(4)* for treating the stress-strain properties of a molecular network. It has since been derived in an identical form on the basis of the somewhat different molecular model examined by Flory and Rehner *(5)*. I will not attempt here to go into details of these molecular theories, which involve rather specialized statistical techniques, but will only refer briefly to their basic conceptions.

Vulcanized rubber is assumed to consist of an irregular 3-dimensional network of long-chain molecules, the junction points between which being due to vulcanization. Apart from these junction points the molecules are assumed to be free to move in a random manner on account of the thermal agitation of the atoms of the chain *(1)*. In the unstrained state it is assumed that the distribution of the distances between junction points is given by the Gaussian formula

$$p(x)dx = \frac{\beta}{\sqrt{\pi}} e^{-\beta^2 x^2} dx \qquad (1)$$

in which $p(x)dx$ represents the probability that this distance lies between x and $x+dx$.

The effect of the strain is to alter the distances between junction points in some geometrically determinable manner, and hence to alter the distribution function (1). It is then a matter of statistics to determine the probability of this new distribution. From the probabilities thus calculated for the strained and unstrained states the entropy of deformation is derived, and this in turn gives the work of deformation (W). The result is expressed by the equation

$$W = \frac{1}{2} NkT (\lambda_1^2 + \lambda_2^2 + \lambda_3^2 - 3) \qquad (2)$$

where N is the number of chains per cc. in the network, k is Boltzmann's constant, and T the absolute temperature. λ_1, λ_2 and λ_3 are the three principal extension ratios, i.e., the edges of the block in Fig. 1 (b). It is assumed in the calculation that the rubber does not change in volume on deformation.

Remarkable features of this general equation are its comparatively simple form—an important consideration in view of the complexity of the problems of non-homogeneous strain—and the inclusion in it of only one physical constant characteristic of the material, namely N, the number of chains per cc. It is useful to express this in a different form, by writing

$$NkT = \frac{\rho RT}{M}$$

where ρ is the density, R the gas constant, and M the "molecular" weight of the segments of molecular chain between junction points. In this way it is seen that the details of the molecular structure in no way affect the elastic properties, which are determined solely by the weight of molecular chain between junction points.

Determination of Stresses

It is a simple matter to calculate from the work of deformation given by (2) the principal stresses corresponding to a given set of strains. These are expressed by the equations

$$\begin{aligned} S_1 - S_2 &= G (\lambda_1^2 - \lambda_2^2) \\ S_2 - S_3 &= G (\lambda_2^2 - \lambda_3^2) \end{aligned} \qquad (3)$$

where G is written in place of NkT. These equations express the fact that, given the strains, we cannot determine absolutely the principal stresses, but only the difference between any two of them. This is a fundamental difficulty arising from the assumed incompressibility of the rubber. Clearly, if S_1, S_2 and S_3 are stresses which produce a given state of strain, then $S_1 + p$, $S_2 + p$, and $S_3 + p$ will produce the same state of strain, since the arbitrary hydrostatic pressure, p, has no effect on an incompressible material. On the other hand, if the stresses applied to a body are specified, then the strains are determinable by means of equations (3).

From these equations the stress-strain curves for the simpler types of strain are readily determined. For the case of simple elongation or uni-directional compression, the relation is

$$F = G(\alpha - 1/\alpha^2) \quad (4)$$

where F is the force per square cm. of the unstrained cross section and α is the ratio of the extended (or compressed) length to the original length. For a 2-dimensional extension, such as occurs on inflation of a balloon, the tensile force, t, acting across a line of unit length in the stretched sheet is given by

$$t = G(1 - \alpha^3) \quad (5)$$

where α is here the thickness in the stretched state of a sheet whose original thickness was 1 cm. Again, for a simple shear of amount σ, the corresponding shear stress $F\sigma$ is

$$F\sigma = G\sigma \quad (6)$$

showing that for this particular type of strain Hooke's Law is applicable even when the strain is large.

In all these cases the stresses are uniquely determined because at least one of the principal stresses (i.e., that acting on a free surface) is known to be zero. If we make the deformations small, equations (4), (5) and (6) reduce to forms identical with the classical theory of small elastic deformations, as would be expected.

Experiments on vulcanized rubber *(6)* have shown that the above equations represent the behavior of this material reasonably well in simple elongation, 2-dimensional extension, uni-directional compression and shea• except at the highest strains, when the theory ceases to be applicable. Moreover, the theory has correctly predicted the behavior of rubber under combined elongation and shear *(6)*.

These examples are sufficient to show that we are now in possession of a reasonably satisfactory theory, of remarkable generality, on which the development in detail of the mechanics of rubber-like materials can safely be based. In applying the theory, however, it is important to remember that it is limited to the amorphous or truly rubber-like state; it is not necessarily applicable in the presence of disturbing factors such as crystallization, or in the neighborhood of the transition to the glassy state which occurs at very low temperatures.

LITERATURE REFERENCES

(1) Treloar, *I.R.J.*, p. 319 (1945).
(2) Mooney, *J. Applied Physics*, Vol. 11, p. 582 (1940).
(3) Treloar, *Trans. Faraday Soc.*, Vol. 39, p. 241 (1943).
(4) Wall, *J. Chem. Phys.*, Vol. 10, p. 485 (1942).
(5) Flory and Rehner, *J. Chem. Phys.*, Vol. 11, p. 512 (1943).
(6) Treloar, *Trans. Faraday Soc.*, Vol. 40, p. 59 (1944).

New Method of Cleaning Rubber Molds

A SPECIAL "soft grit" blasting process developed during the war by the Northern Regional Research Laboratory of the Department of Agriculture at Peoria, Ill., for removing hard, thick carbon deposits from cylinders and pistons of aircraft engines undergoing overhauling, is reported to hold promise for the efficient and economical cleaning of rubber molds.

In the process the metal to be cleaned is first degreased and then cleaned in a blasting cabinet with finely ground corn cobs or similar grit under 80 to 90 psi air pressure. Standard sand blasting equipment has proved entirely satisfactory but Naval Air Stations state that the pressure blast type is preferred.

Corn cobs are first crushed to pass a ¼-inch to ½-inch mesh screen, after which they are ground to meet specifications which call for passing a 10 mesh screen and retention by a 32 mesh screen. In some instances where a particularly difficult job of cleaning occurs, a percentage of rice hulls may be mixed with the ground corn cobs. A mixture of 60% corn cob particles and 40% rice hulls flows easily and has a more rapid cleaning action than corn cobs alone.

Not only carbon deposits but paint, varnish and lacquer may be easily removed from metal surfaces by soft grit blasting. The soft grit method of cleaning performs its task without wearing away or pitting the metal and therefore the work is accomplished without any change in the dimensions of the mold.

The price of ground cobs in bulk is in the neighborhood of $40 a ton. Rice hulls sell for approximately one-third of the cost of the ground cob grits. Sand in bulk costs $10 to $12 per ton. Because of the fact that the sand weighs almost four times as much as the corn cobs or rice hulls, the cost of cleaning by either method is approximately the same.

In view of the fact that such excellent results have been attained by this method on a variety of difficult metal cleaning jobs, it is reasonable to suppose that rubber molds can be cleaned by this process much more efficiently, more quickly, and at less expense than by the methods employed at present.

Xactline Temperature Control Unit

A new temperature control unit, which is said to provide temperature-variation control as low as .2° F. and power on-off cycles as short as three seconds, is being manufactured by the Claud S. Gordon Co., 3000 South Wallace St., Chicago, Ill. Called "Xactline," the unit operates without the use of cams, motors, bearings, shafts, gears, or other rotating mechanical parts. It gives straight-line temperature control without coordination with other equipment. According to the manufacturer, Xactline is a solution for costly overshoot and undershoot temperature variations prevalent in heat processing fields. It can be used on all types of ovens and injection molding machines employing conventional millivoltmeter and potentiometer type controlling pyrometers or gas-fired equipment employing solenoid-controlled or motor-operated valves. The unit is housed in a cast aluminum case 8¼ inches high, 6¼ inches wide, and 3 inches deep, and is designed for surface mounting installation.

Developments in the Field of Testing Procedures for the Evaluation of Natural and Synthetic Rubbers and Plastic Elastomers

Sponsored by Bureau of Ships, Navy Department

Part V

By THEODORE A. WERKENTHIN

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CHEMICAL TESTS

Identification Test of Plasticizers in Polyvinyl Chloride: In connection with the evaluation of various types of plasticizers used in polyvinyl chloride plastics, the Naval Research Laboratory developed a procedure for the identification of these plasticizers. The method of determination consists, first, of extraction of the plasticizer from the polyvinyl chloride; second, in electrical measurements; third, in the chemical analyses of the plasticizers. This test was developed by Jones, Lockhart, and Elliott*. Plasticizers which have been determined by this method are: dioctyl phthalate, acetylated castor oil, methyl acetyl ricinoleate, tricresyl phosphate (commercial), tri-m-cresyl phosphate (Eastman), tri-o-cresyl phosphate (Eastman), methyl penta chlorester of corn oil, dibutyl phthalate, tetrahydrofurfuryl oleate, dioctyl sebacate, and Celluflex (G. E.) The method of separation of the plasticizer from the plastic is briefly as follows:

> A 5-10 g. sample of the plastic material is dissolved in 100-200 ml. of hot diisopropyl ketone, filtered through diatomaceous earth (Celite) to remove any insoluble material (fillers, stabilizers, etc.), and the resin is precipitated by the slow addition with vigorous stirring of 400-800 ml. of ethyl alcohol (95%). The precipitate is removed by filtration, washed with alcohol, and then redissolved in hot diisopropyl ketone. It is again precipitated by the addition of excess ethyl alcohol, filtered, washed thoroughly with alcohol, sucked dry on the filter, and then dried in a vacuum oven for 3 hours at 65° C. and 3-5 mm. pressure. The filtrate from the first precipitation is evaporated to dryness, the plasticizer redissolved in absolute methanol and then filtered to remove any residual resin. This filtrate is then evaporated on a steam bath to remove the solvent and finally dried for 3 hours at 110° C. and 3-5 mm. pressure in a vacuum oven.

This method has been found of practical application in connection with the testing of electric cable compounds, and has replaced complex tests of the physical properties of the plasticizer resin in identity tests, especially useful in inspection work.

Guayule Extraction Test: In connection with the exhaustive studies carried out in collaboration with the Department of Agriculture on guayule rubber, a method was developed by the Rubber Laboratory, Mare Island, to extract considerable quantities of this resin from guayule rubber. The small and large extraction apparatus are shown in Figs. 66 and 67, respectively. The large extraction apparatus consists of a boiling vessel, a condenser, extraction vessel, and return siphon. The extracting liquid used is acetone. The acetone is vaporized in the boiling vessel by means of a steam heated water bath. The acetone vapor is led through the siphon tube into the water-jacketed and water-tubed condenser. The conditioned acetone enters the extraction vessel, where the thinly sheeted-out guayule comes in contact with it. When the liquid level in the extraction vessel reaches the top of the siphon tube, the acetone containing some guayule resin spills over, and runs back into the boiling vessel. The extractor acts similarly to a Soxhlet laboratory extraction apparatus, a large version of which is shown in Fig. 66.

The extraction is continued until no more resin is extracted from the guayule rubber. The guayule rubber is prepared for extraction by being sheeted-out in thin strips on a mill. The edges of the sheet are trimmed to give the strip a 12" width. This strip is covered with a ⅛" galvanized screen 12½" wide, and slightly longer than the guayule strip. The two strips are rolled up together. In this manner, the adjacent layers of guayule are prevented from adhering. The roll is placed on a low platform in the extraction vessel in order that the acetone may reach the bottom as well as the top and sides of the rubber. The resin is

* Jones, Lockhart and Elliot, "The Identity Test for Plasticizers of the Type Used in Polyvinyl Chloride Plastics," Unpublished Paper, April, 1944.

FIG. 66 (Left)—Soxhlet extraction apparatus for guayule rubber.

FIG. 67 (Right)—Apparatus for extracting resins from guayule rubber.

recovered from the extract by boiling off the acetone. In order to prevent the resin from oxidizing, it is found desirable to add ½ to 1% of phenyl alpha naphthylamine during the boiling off of the acetone. If a resin-free guayule rubber is needed, the extracted guayule is re-worked and sheeted-out again and re-extracted.

Determination of Free Carbon in Compounds of Natural Rubber, Buna S, Buna N and Vinyl Polymers and Copolymers: In connection with the evaluation of synthetic rubbers, the Material Laboratory, Navy Yard, New York, developed an ingenious method for the evaluation of free carbon in compounds of natural rubber, GR-S, Buna N, as well as in vinyl polymers and copolymers. This method has been in use in the Laboratory in the evaluation of all types of mechanical rubber goods, electric cables and miscellaneous rubber items. The apparatus used in this determination is illustrated in Figs. 68 and 69. The method is briefly the following:

> A small sample of preferably 0.2727 gram of 20 mesh ground-up vulcanized rubber, which has been previously extracted with acetone and chloroform, is weighed into a number 00000 Coor's high form porcelain crucible. The acetone-chloroform extracts are dried and weighed as usual. The crucible is next placed in a No. 3 alundum combustion boat and heated in the current of dry hydrogen while the temperature of the furnace is raised from room temperature to 900° C. After the furnace is cooled sufficiently, the sample is removed and a few drops of hydrochloric acid are added to decompose carbonates and sulfides. The crucible is next placed in a carbon combustion furnace previously heated to a temperature of 900 to 1000° C. A stream of dry oxygen is passed over the sample and combustion is continued for ½ hour. A catalyzer consisting of a roll of copper gauze is placed at one end of the combustion tube on the exit side. The purification and absorption train consists of a zinc jar filled with 40 mesh metallic zinc. The carbon dioxide evolved is absorbed in anhydrone and ascarite. The percentage of free carbon is calculated from the increase in weight of the ascarite bulb and the sum of the percents of the acetone and chloroform extracts.

Water Solubility Test of Cellular Hard Rubber: The evaluation of hard cellular rubber, besides the various physical tests, requires the determination of its behavior to water absorption. The Rubber Laboratory, Navy Yard, Mare Island, developed a simple procedure for the determination of percent extraction with distilled water. It had previously been determined that distilled water extraction was much more severe than extraction with salt water. Consequently, it was felt that if a sample passed the distilled water test it would be satisfactorily resistant to salt water or sea water. A sample of cellular rubber having no "skin" surfaces is prepared which is 1" x 2" x 1/16" (Fig. 70). The specimens are placed in a large test tube weighed down with small pieces of lead and covered with 75 ml. of distilled water and allowed to remain for 48 hours. After this period the water is drained off and the sample and the bottle rinsed with an additional quantity of 25 ml. of distilled water. The water is combined and is evaporated to dryness in a glass weighing bottle on an electric hot plate. The residue is then dried in an air oven at 50°C., cooled in a dessicator, and weighed. It is interesting to note that a long narrow specimen having considerable area shows a much higher extraction than a cubical piece of the same cubic content of rubber, showing that this is largely a surface phenomenon. The size of the specimen used for the test is, therefore, quite critical. In tests conducted at the Rubber Laboratory the amount extracted in a specimen 1" x 4" x 1/16" was five times as large as the extraction obtained from a 1" cube.

Accelerated Corrosion Test for Flame-Sprayed Organic Coatings: The rapid evaluation of different types

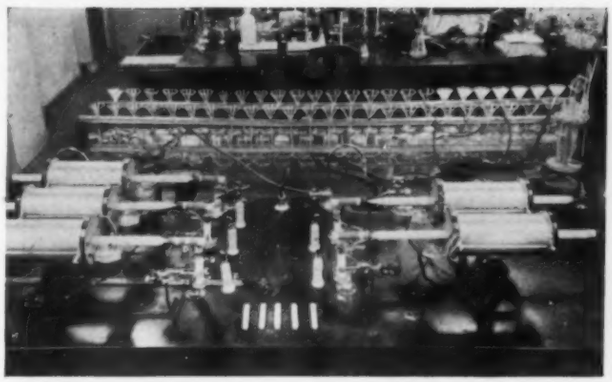


FIG. 68—Apparatus for free carbon determination by depolymerization of the rubber hydrocarbons with hydrogen.

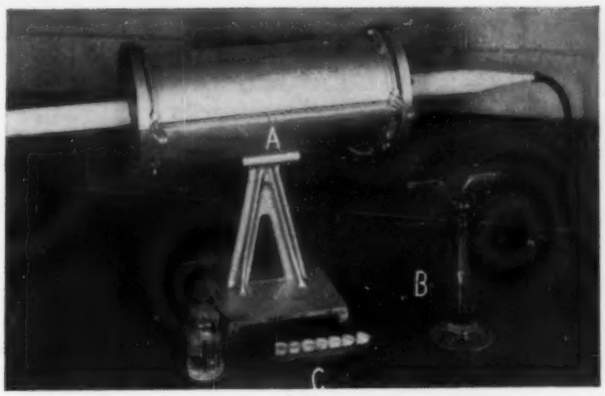


FIG. 69—Close-up of apparatus for free carbon determination.

of flame-sprayed organic coatings used in protecting struts, rudders, shafts and other surfaces exposed to sea water is important in order to differentiate between those coatings which will last under water indefinitely without losing their integrity, and other coatings which appear entirely satisfactory to start with, but which develop pinholes after being subjected to the action of salt water. Dr. Scott P. Ewing developed a procedure which was found to be quite satisfactory. The apparatus is shown diagrammatically in Fig. 71. The iron jig, a piece of 4" shafting usually 6" long, is coated with the experimental coating. It is then immersed in a 3 percent salt solution, and is connected to a 1½ volt dry cell in such a way that the plus terminal of the dry cell is connected to the jig and the negative terminal of the dry cell is attached to a copper plate likewise immersed in the 3 percent salt solution. In order to expedite the penetration of the salt water through the sprayed coating, it was found advantageous to subject the solution and jig to an air pressure of 25 lbs. per square inch. It was found convenient to use a glass container inside the steel bolted pressure vessel shown in the illustration. Typical coating which is impervious is shown in Fig. 72, and a coating which is badly pitted with pinholes, which results in rust formation, is shown in Fig. 73.

LIGHT AND WEATHER AGING TESTS

Ultra-Violet Accelerated Aging Test: In 1939 the author and his co-workers developed a test procedure for determining the resistance of natural and synthetic rubber to ultra-violet light. This technique was developed at that time and was subsequently published in 1941*. These methods are now used extensively in Federal and Navy Department specifications and are also specified by the American Society for Testing Materials. Previously it had been customary to gage the extent of deterioration caused by sunlight or ultra-violet light exclusively by means of surface cracking. However, it was determined that a much more convenient criterion was the determination of the change in tensile strength and percent elongation of the rubber when exposed to ultra-violet light or sunlight. At first tensile specimens were exposed in the sample holder, but it was soon discovered that results were not reproducible because of "edge" or end effect. However, entirely satisfactory results were obtained from it when rubber slabs were exposed which were sufficiently large so that tensile specimens could be cut out of them after they had been subjected to ultra-violet light or sunlight. Deterioration of tensile strength and loss in percent elongation were, in many cases, noticeable long before visual effects such as checking and cracking could be detected.

The technique of judging light deterioration by change in tensile strength and percent elongation, in addition to the checking and cracking, has since been one of the standard procedures in the evaluation of the

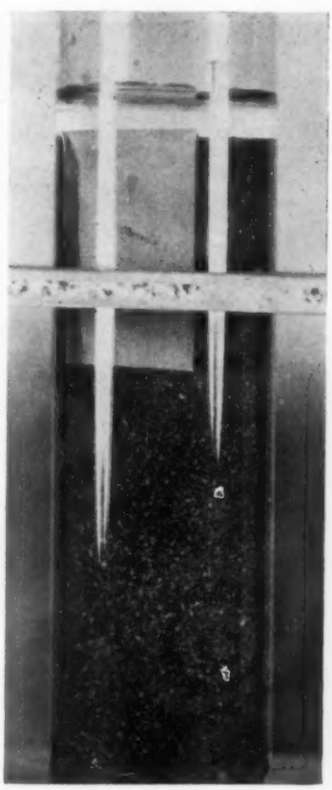


FIG. 70 — Cellular rubber extraction by water.

* Werkenthin, Richardson, Thornley, and Morris, "Light and Accelerated Light Aging of Rubber, Synthetic Rubber, and Rubber Substitutes," *R.A. (N.Y.)*, Vol. 50, Nos. 2 and 3 (Nov. and Dec., 1941); also "Equipment for Accelerated Light Aging of Rubber and Methods of Evaluation of Ultra-Violet Light and Sunlight," *I.R.W.*, Vol. 105, Nos. 2 and 3 (Nov. and Dec., 1941).

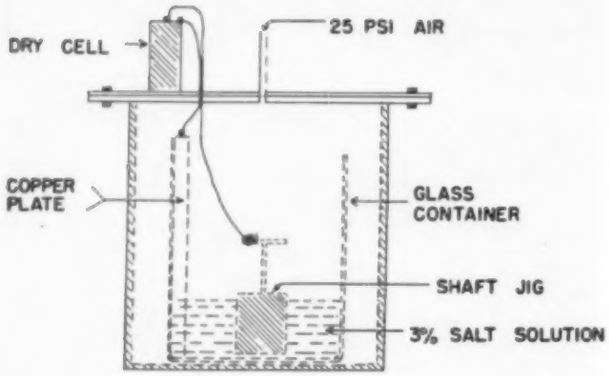


FIG. 71—Apparatus for accelerated corrosion test of flame-sprayed organic coatings.

light aging characteristics of natural and synthetic rubber, regardless of whether deterioration is caused by natural sunlight, ultra-violet light or ozone. In order to expose rubber, synthetic rubber and plastic elastomer strips at any desired degree of extension to sunlight, ultra-violet light or ozone, a special type of holder (Fig. 74) was devised by the Rubber Laboratory, Navy Yard, Mare Island.

Powder Method to Determine Quantitative Degree of Cracking of Rubber after Exposure to Sunlight, Ultra-Violet Light and Ozone: In order to get a quantitative estimate of the extent of cracking, the following method was developed by the author. A sheet of rubber 2" wide by 7" long by 1/16" thick is stretched to the desired degree (usually 10 to 15%) in the Mare Island sample holder and exposed to sunlight, ultra-violet or ozone deterioration. The sample, still in the stretched condition after exposure to sunlight or accelerated light, is allowed to cool to room temperature and is carefully covered wth a mixture consisting of a homogeneous blend of 5 percent powdered silica gel and 95% of lead sulfate. Care is taken to insure that the powder enters all cracks and crevices. The excess powder is removed carefully in such a manner that none of the powder is scraped or brushed out of the cracks. The sample is then inverted over a glazed black paper, tapped a few times and the balance of the powder carefully removed by means of a camel's hair brush. The powder is transferred to a weighing bottle and weighed to the nearest one-half milligram. The area of the rubber exposed to the light is measured and the volume of cracks computed using the apparent density of the mixed powder, the area exposed and the weight of the powder filling the crevices.

The volume of cracking is conveniently reported as number of cubic millimeters per square decimeter of exposed area. The method obviously will not be applicable where the rubber compound has deteriorated sufficiently to assume a tacky consistency. Silica gel is used in order to prevent sticking and lead sulfate is used in order to obtain as heavy a powder as can be conveniently used. Since the apparent density of the powder mixture enters into the calculation, the exact density is not important except that where considerable variation in apparent density occurs there will be errors due to "packing."

Typical results on accelerated aging of synthetic and natural rubber obtained by the author and co-workers with this procedure are given in considerable detail*. Additional results were reported by Morris, James and the author**, by Chatten and the author‡, and by Morris, Hollister, Barrett and the author‡. The assembly for light aging and water spray is shown in Fig. 75.

FIG. 72—Jig after immersion for 5 days in 3% salt solution at 82° F. and 25 p.s.i. air pressure with plus terminal of 1½ volt dry cell connected to jig and negative terminal to solution. Satisfactory.

FIG. 73—Jig after immersion for 5 days in 3% salt solution at 82°F. and 25 p.s.i. air pressure with plus terminal of 1½ volt dry cell connected to jig and negative terminal to solution. Defective.

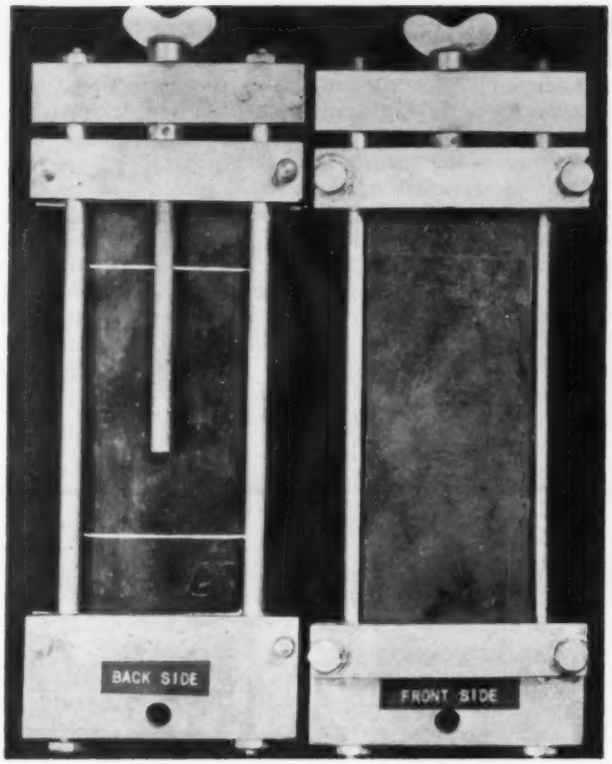


FIG. 74—Special holder for rubber specimens for light aging tests.

One of the difficulties with all of these tests has been the inability to segregate heat effect from the ultra-violet light effect. Numerous procedures are being investigated at the present time to develop a deterioration method, which will separate these two agencies of deterioration of natural and synthetic rubber. In addition, the relationship between ozone deterioration and sunlight and ultra-violet deterioration is being intensively investigated. The accelerated ultraviolet light test procedure using the flaming carbon arc does not always result in direct correlation with natural sunlight aging. However, without this rapid method of evaluation it would have been impossible to classify and approve all of the large number of synthetic rubber compounds used in gaskets, hose, and all manner of rubber articles exposed to weathering during service.

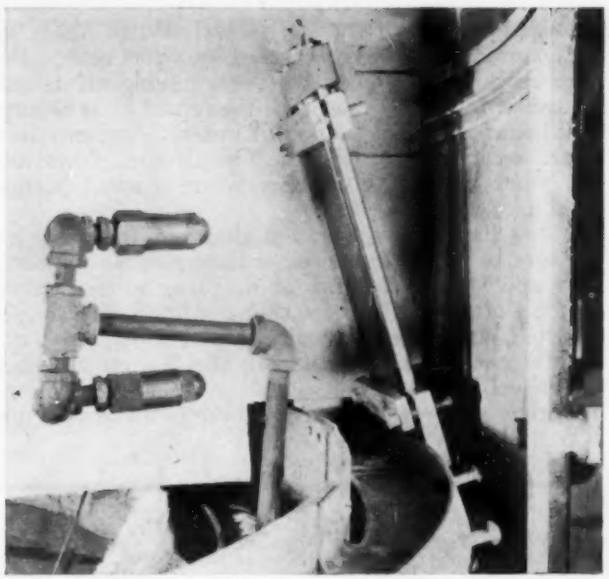


FIG. 75—Correct angle of samples for uniform ultra-violet light exposure.

Ozone Aging Apparatus for Rubber: Recently, Lew, Barrett and Morris of the Mare Island Rubber Laboratory have developed an ozone exposure test which indicates some interesting preliminary results. It is shown in Fig. 76. The ozone generator used is a Homozone Electrical De-odorizer, Model SPH, manufactured by the Automatic Electrical Devices Co., Cincinnati, Ohio. The rest of the equipment consists of standard laboratory equipment, such as absorption bottles and liter flasks, as seen in the illustration. When the apparatus is in operation, the ozone is swept over the specimens in the desiccator by means of compressed air entering the apparatus through the valves.

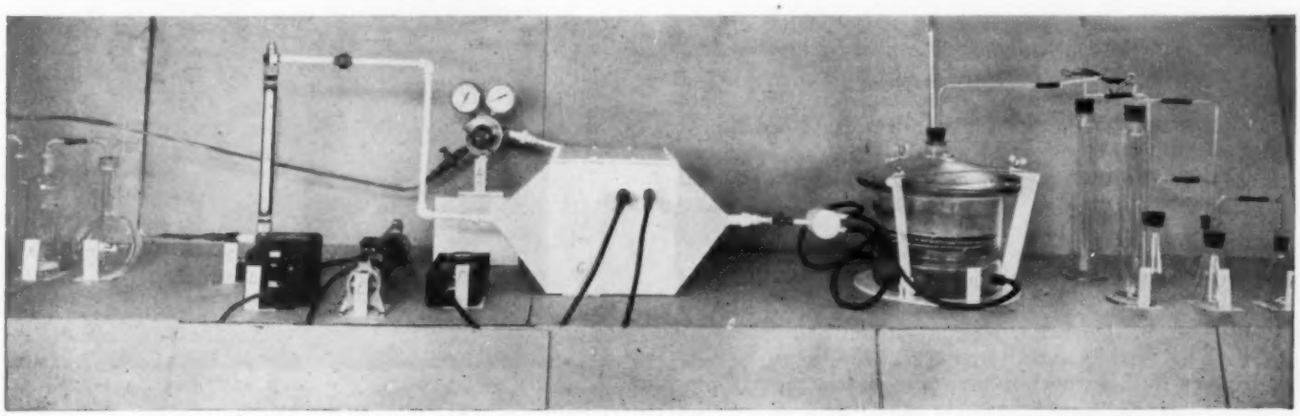


FIG. 76—Apparatus for aging of rubber in ozone.

* Werkenthin, Richardson, Thornley, and Morris, "Light and Accelerated Light Aging of Rubber, Synthetic Rubber, and Rubber Substitutes," *R.A. (N.Y.)*, Vol. 50, Nos. 2 and 3 (Nov. and Dec., 1941).

** Morris, James and Werkenthin, "Sunlight and Accelerated Light Aging of Synthetic Rubbers," *R.A. (N.Y.)*, Vol. 51, No. 3 (June, 1942).

† Chatten and Werkenthin, "Variables and Suggested Modifications in Accelerated Light Aging," *I.R.W.*, Vol. 108, No. 1 (April, 1943).

‡ Morris, Hollister, Barrett, and Werkenthin, "Natural and Accelerated Light Aging of Hevea and GR-S Vulcanizates," *R.A. (N.Y.)*, Vol. 55, No. 1 (April, 1944).

The rate of flow of the air is controlled manually by means of valves and is measured by a rotameter. Before reaching the rotameter the incoming air is saturated with water by means of the fritted glass absorption bottle containing 350 cc. of water. Any entrained water is trapped in a flask. The air then flows into the ozone generation chamber where a small portion of it is oxidized to ozone.

From the ozone generation chamber, the ozone-air mixture is led to the desiccator through a 4-way manifold and 4 equal lengths of neoprene tubing. Each of the 4 neoprene tubes are connected to a glass T-tube inserted into 4 holes equally spaced around the circumference of the lower part of the desiccator. Each T-tube is held in a horizontal position by means of neoprene stoppers. In this way the ozone-air mixture enters the specimen chamber through 8 ports. This arrangement is devised to aid the equal distribution of the ozone-air mixture throughout the desiccator. The mixture then flows through the baffle plates, over the test specimens placed on top of the baffle plates, and out through the center of the desiccator lid. From there, the ozone-air mixture is led into the absorption bottles which absorb all of the unused ozone. All flexible connections and stoppers are made of neoprene.

Preliminary results indicate that some correlation between ozone exposure in the above apparatus and weather aging is experienced. However, much additional work on natural rubber and on all the synthetic rubbers needs to be completed before the true usefulness of this test can be assayed.

(To Be Continued)

Singer Heat Sealing Machine

A HEAT sealing machine, recently introduced by the Singer Sewing Machine Co., 149 Broadway, New York 6, N. Y., which operates much like a conventional sewing machine, is currently being used in the fabrication of many articles of thermoplastic film. Among the consumer products on which it is being successfully used are raincoats, powder capes, clothes bags, shower curtains, refrigerator dish covers, umbrella pouches, aprons and lamp shades. The wide range and flexibility of the machine are expected to result in many further applications, especially in rainwear and other waterproof articles where the absence of needle punctures is an advantage.

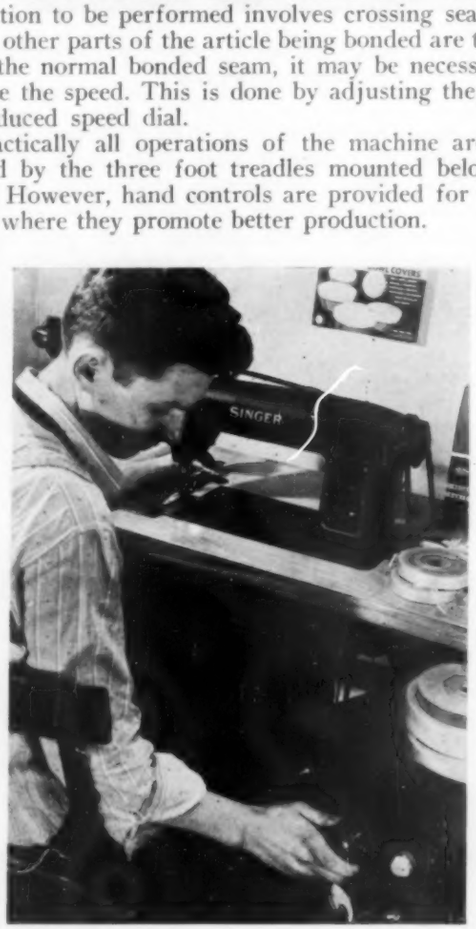
In general appearance and method of operation the device closely resembles a conventional high speed sewing machine. However, it employs no needle, thread or stitch forming mechanisms. The seaming is accomplished by the passage of a high-frequency electrical current through the thermoplastic material being bonded. The material is passed through two electrodes, one above and one below the material to be bonded. The heating of the thermoplastic sheets, as they pass through the machine, fuses the layers together with a neat, almost invisible seam as strong as the material being bonded.

According to the manufacturer, practically any thermoplastic sheet material on the market today, whether calendered or cast, can be successfully bonded by use of the device. Seams can be straight or curved and sharp corners can be turned readily. Additional attachments for the machine permit special operations such as binding, hemming and half lap seam felling.

The head of the machine has a modern streamlined overhanging arm and flat bed typical of the latest high-speed sewing machines. A spring actuated roller presser holds the work to be bonded gently but firmly down on the lower electrode. A shaft under the bed carries a feed wheel which projects through a slot in the throat plate in order to contact the lower plastics sheet. The feed is intermittent and the work is held stationary during the bonding period and moved forward when the upper electrode is lifted.

The movement of the feed wheel and the rise and fall of the electrodes are controlled by mechanism housed within the arm. The amount of feed during each cycle, and therefore the bonding, is variable over a considerable range by adjusting the upper or high speed dial on the front of the vertical arm. When the operation to be performed involves crossing seams, or when other parts of the article being bonded are thicker than the normal bonded seam, it may be necessary to reduce the speed. This is done by adjusting the lower or reduced speed dial.

Practically all operations of the machine are controlled by the three foot treadles mounted below the table. However, hand controls are provided for use in cases where they promote better production.



One of the new Singer heat-sealing machines in operation at the plant of the Bland Charnas Co. in Yonkers, N. Y.

Editorials . . . . . .

The Battle on Price

THE directive issued by Reconversion Director John R. Steelman on September 6 bidding the Office of Rubber Reserve of the Reconstruction Finance Corporation to maintain the sale price for natural rubber at 22.5 cents per pound until the end of the year climaxed a feud among Federal agencies which extended over a period of months, or practically ever since the United States agreed to pay the British, Dutch and French 23.5 cents per pound for rubber for the July 1-December 31, 1946, period. The battle waxed hot at times, and reached a point at which RFC officials openly stated they would increase the sale price to approximately 26 cents, unless Reconversion Director Steelman issued a negative directive, thus assuming responsibility for the decision. In fact, all purchases of natural rubber made from Rubber Reserve during the month of August were made at the 22.5 cent figure, with the understanding that any increased price would be retroactive to July 26.

The background of the feud is interesting. When the negotiations with the British, Dutch and French culminated in the agreement that the United States would pay 23.5 cents per pound for rubber, f.o.b. Far Eastern port, for the six months ending December 31, 1946, which means approximately 25.75 cents laid down in New York and which compares with 20.25 cents a pound, f.o.b. Far Eastern port, for the first six months of the year, Rubber Reserve immediately proposed that it increase the sale price to domestic rubber consumers sufficiently to cover the new cost. The Office of Price Administration at once expressed opposition to this increase, and enlisted the support of the Civilian Production Administration. These two agencies apparently convinced the Office of War Mobilization and Reconversion that holding the line on natural rubber prices to the domestic trade was essential in the battle against inflation.

Rubber Reserve estimated that unless the sale price of natural rubber was increased a loss of at least $12,700,000 would be entailed. RFC officials pointed out that this loss was inevitable, unless the price was increased, because the new Price Control Extension Act prohibits any new price-stabilizing subsidy and provides funds only for concluding contracts to purchase high-cost natural rubber from Latin America and from Liberia, contracts made during the emergency period when rubber at any price was cheap.

OPA and CPA officials, on the other hand, argued that stocks on hand as of June 30, 1946, plus additional deliveries of high-cost rubber for the balance of the year, which were originally intended to be subsidized when sold, were ample to enable Rubber Reserve to hold to the 22.5 cents per pound figure. Furthermore, they continued, Rubber Reserve may be able to buy its natural rubber much lower than 23.5 cents per pound after the first of the year, and can balance any losses accrued during the last six months of 1946 by continuing to sell natural rubber at 22.5 cents per pound well into 1947.

The figures submitted by RFC officials to combat this combined OPA-CPA argument were these: Rubber Reserve expects to import approximately 360,000 tons of natural rubber this year, of which 150,000 tons, or some 42%, will cost approximately 25.75 cents per pound. It is expected to make available to the industry in the last six months of the year some 192,000 tons. If these 192,000 tons are sold at 22.5 cents per pound, then RFC is faced with a loss of well over $10,000,000. As for the argument that Congress intended high-cost rubber to be subsidized until the end of the agreements covering the purchase of such rubber, RFC officials stated that it was fallacious reasoning to assert that any government agency must spend all the money Congress appropriates for intended subsidies.

To all intents and purposes, the feud was culminated when Reconversion Director Steelman issued his directive. However, there is still a possibility that the sale price of natural rubber may yet be increased. The full powers of the Office of War Mobilization and Reconversion have never been brought to a test. The Board of Governors of the RFC may yet attempt to override Mr. Steelman's directive. This in turn might require a Presidential directive, but it is within the realm of possibility. The next few weeks will tell.

CURRENT NEWS OF THE MONTH

SOME 30 NEW PRODUCTS ADDED TO THE LIST WHICH MAY BE MADE FROM NATURAL RUBBER

APPROXIMATELY 30 products, including rubber cement for all purposes, shoe soles and heels, tennis and squash balls, and baseball and golf ball centers, have been added to the list of items which may be made wholly or in part from natural rubber, and in some instances butyl rubber. At the same time, use of rubber latex, now in extremely short supply, is restricted to a specific list of products, the list being composed chiefly of medical goods, but including food-sealing compounds and some rubber-protected or lined equipment, such as that for handling corrosive materials and explosives. These actions were taken by the Civilian Production Administration on August 21 with the issuance of a revised Rubber Order R-1, which incorporates Appendix I and all recent amendments.

In general, as much as 10% natural rubber is now permitted in shoe soles and heels, although special heels which will not leave marks on floors may use from 30 to 50%. Surgical tape and cohesive bandages may contain 50% natural rubber instead of the previous 15%, and conveyor and elevator belting 35% instead of 25%. The amount of natural rubber in flat transmission belting has been increased from .07 pound to .45 pound per 1200 square inches of ply.

Other Revisions in Order

Among the more important revisions contained in the revised Rubber Order is a redefinition of scrap rubber which will prevent re-use of high quality natural rubber scrap in products not authorized to be produced.

Permissible inventories of natural rubber and rubber latex remain at 6 days; those for all types of synthetic rubbers and reclaimed rubber have been set at 30 days. Previously, the maximum inventory for reclaimed rubber was 45 days and for GR-S 30 days.

Resumption of transit shipments in bond of rubber and rubber products through the United States from one foreign nation to another, which were prohibited during the war, is permitted under the terms of the new order. The amount of GR-S which may be used each month by one firm or individual for experimental purposes is now limited to 250 pounds. Previously there was no limitation.

According to W. J. Sears, director of the CPA Rubber Division, increasing the number of products which may be made from natural rubber and increasing the percentage used in other articles was made possible because of larger supplies from the Far East. Mr. Sears made it clear that the expanded consumption of natural rubber which will result from the revision of the Rubber Order will not decrease quantities available for tires, other transportation products, or stockpiling.

With the reissuance of the rubber order and Appendix I, now officially known as Rubber Order R-1, as Amended August 21, 1946, and the reissuance of Appendix II on August 15, all CPA rubber controls and procedures are now invested in those two documents.

Additional Actions Taken

In addition to the revision of the Rubber Order, three additional important actions were taken by official Washington in the past several weeks, as follows:

The Office of Rubber Reserve announced on August 29 that effective immediately purchasers of natural and synthetic rubber are no longer required to furnish reports of rubber consumed in Government Orders as specified in its General Sales and Distribution Circular. In the event purchasers have partially completed reports, it is not necessary that they be completed or any information forwarded to Rubber Reserve.

On the same date Rubber Reserve announced that in line with its policy to adjust prices to reflect costs, the price of GR-S Black 1 and GR-S Black 1-AC has been reduced to 14.67c per pound and the price of GR-S Black Plant Clean-Up to 13.2c per pound. Uniform freight charges are added to both of these prices when shipments are made. The new prices reflect a reported lower incremental cost of blending the carbon black with the GR-S and the recent increase in the cost of carbon black.

On August 28 CPA announced that producers of butyl rubber, GR-S and reclaimed rubber are now eligible for priority assistance to maintain or increase production. Producers of GR-I and GR-S can now obtain CC ratings to purchase production materials, replacement equipment, additional equipment for increased production of petroleum butadiene, and materials needed for maintenance, repair and operation. Producers of reclaimed rubber may obtain CC ratings to purchase capital equipment, materials for maintenance, repair and operation.

Increase Tire Price Ceilings

Retail ceiling prices on passenger car, motorcycle, truck and bus and industrial tires were increased approximately 2½% by OPA on August 23 to meet the requirement of the new price control act that distributors be allowed their percentage mark-up of March 31, 1946. The increases were covered in Amendment No. 13 to R.M.P.R. 143 (Wholesale Prices for New Rubber Tires and Tubes) and Amendment No. 9 to R.M.P.R. 528 (Tires and Tubes, Recapping and Repairing, etc.).

The increases are allowed both on sales by retail dealers and on all sales at retail by wholesale distributors. The new retail ceiling for the popular size 6.00x16 four-ply passenger car tires, which represents 70% of all passenger car tires sold, will be $16.10, compared with $15.70 previously. Other price actions taken in recent weeks by OPA included the following:

Tire Repair Materials: Establishing of manufacturers' ceiling prices for new tire and tube repair materials has been simplified under the terms of Amendment No. 5 to R.M.P.R. 131 (Camelback and Tire and Tube Repair Materials). The change, effective July 26, permits the setting of ceilings on new items in line with the ceilings for the same or similar items sold by another manufacturer. The

HOLD RUBBER PRICE

Over the objections of the Reconstruction Finance Corporation, the sale price for natural rubber will be held at 22½ cents a pound for the balance of the current year. A directive to this effect was served on the RFC by Reconversion Director John R. Steelman on September 6. The RFC had previously served notice to the trade that it intended to increase the price to 25¾ cents a pound to cover the present cost of rubber to the United States from the Far East. In announcing the directive, Mr. Steelman said that an increase in the price of natural rubber at this time on the domestic market would have an "unfortunate effect" on the stabilization program.

former requirement of detailed cost figures is abolished.

White Sidewall Tires: Ceiling prices for all sellers of black and white sidewall passenger car tires, now in limited production, have been established in Amendment No. 12 to R.M.P.R. 143 and Amendment No. 8 to R.M.P.R. 528. The ceilings are 12.5% above those for all-black sidewall tires, and became effective August 21.

Bicycle Tires: Without changing the general level of prices, dollar-and-cent ceiling prices for replacement bicycle tires and tubes according to size and type have been substituted for dollar-and-cent ceilings based on various brand names. The change-over was covered by Amendment No. 13 to M.P.R. 435 (New Bicycle Tires and Tubes) and was effective August 28.

Coated Fabrics: Amendment No. 16 to M.P.R. 478 (Coated and Combined Fabrics), issued on August 23 and effective August 28, provides for approval or disapproval by OPA of maximum prices reported to it by wholesalers and supply jobbers of coated and combined fabrics under Section 9 of the regulation. Heretofore no approval by OPA of the prices reported was necessary.

Rubberized Clothing: Under the terms of Amendment No. 28 to M.P.R. 220 (Certain Rubber Commodities), manufacturers' maximum prices for rubberized protective clothing, such as clothing for industrial workers, have been increased 8.6%. The increase, effective August 19, can be passed on by distributors of such clothing.

Splitting Tires: A price of $17.50 per ton for splitting beadless tires has been established in Amendment No. 1 to S.S.R. 66 to R.M.P.R. 165 (Services). The price of $15.88 per ton, formerly established for splitting of all tires, remains as ceiling for splitting beaded tires.

Additional Navy Specifications

One additional specification on rubber has been issued by the Bureau of Ships of the Navy Department since our last report. A copy of this specification may be secured by addressing a request to the Navy Department, Bureau of Supplies and Accounts, Washington 25, D. C. The specification follows:

Navy Dept. Spec. 52P60A—Protective Coating Material, Polymer - Powder (Product of an Organic Dihalide and an Inorganic Polysulfide), July 1, 1946.

Establish Nichols Engineering

A new company, known as Nichols Engineering, has been organized at 2085 Huntington Turnpike, Bridgeport 18, Conn., for the production of mechanical rubber goods. L. A. Nothnagle, Jr., and C. Robert Schulz are co-owners of the new company and also serve as factory manager and chief chemist, respectively. Mr. Schulz was formerly chief chemist of the tire valve division of the Bridgeport Brass Co., Bridgeport 2, Conn.

Rubber Companies Merged

Acme Rubber Manufacturing Co. and the Hamilton Rubber Manufacturing Co. have been merged to form the Acme-Hamilton Manufacturing Corp., with main offices on Mead St., Trenton, N. J. The new company has filed a registration statement with the Securities and Exchange Commission covering the issue of 50,000 shares of $20 par value 5% cumulative preferred stock together with 82,000 shares of $1 par value common stock. The company plans to use $705,000 of the proceeds to discharge a debt and the balance for general corporate purposes. Officers of the new company are Albert M. Kahn, president; A. J. Kaminsky, executive vice-president and treasurer; Peter Jenkins, vice-president, and Charles J. Gale, secretary.

To Establish Factory in Troy

According to recent reports from Troy, Ohio, the B. F. Goodrich Co. will establish one of its factories in that city. The company is expected to purchase a surplus plant there which the government constructed during the war for the Waco Aircraft Co. The reports indicate that Goodrich plans to manufacture automobile brakes and belts and possibly aluminum and magnesium wheels at the plant.

SAE Plans October Meeting

The Society of Automotive Engineers has scheduled a National Transportation and Maintenance Meeting at the Hotel Knickerbocker in Chicago, Ill., on October 16 and 17 to discuss progressive improvement in the operation and maintenance of commercial motor vehicles. Included among the papers to be presented is "Present-Day Truck Tire Maintenance," by Ben Sorci, of Sorci & Bryant, Chicago, Ill.

SEIBERLING RUBBER REACHES ITS TWENTY-FIFTH ANNIVERSARY

The current year marks the twenty-fifth anniversary of the Seiberling Rubber Co. The family name of Seiberling, however, has been connected with the rubber manufacturing industry far longer than twenty-five years, as indicated by the following historical data furnished by the company:

Nearly a century ago the Seiberling family engaged in the farm implement business. During those trying days in our Nation's history at the beginning of the Civil War, J. Fred Seiberling the First, left his farm and founded the Kline, Seiberling and Hower Company which was located in Doylestown, Ohio, just a few miles from the present Seiberling Rubber Company in Barberton, Ohio. In these years of turmoil the present Chairman of the Board, F. A. Seiberling, and Vice President C. W. Seiberling, were born.

The company produced an early model mower. They also produced what was then a new and novel type of reaper. This reaper incorporated what was known as the Dropper, an invention of J. F. Seiberling's which collected the grain and dropped it in piles from which the sheaves were to be tied by hand. This dropping mechanism made the machines very popular and the company prospered until 1871, at which time the elder Mr. Seiberling retired from the company.

Early Seiberling Patents

A few years later, Mr. Seiberling founded the Empire Mower and Reaper Company located at Akron, Ohio. By this time F. A. and C. W. Seiberling were old enough to begin working around their father's factory. The Empire Company was operated by the Seiberling family until 1896. During this period, their farm implements were being continually improved and changed and their latest model was not unlike present day machines. J. Fred Seiberling contributed many inventions and implements to the reaper. Notable among these was the Seiberling knotter used to tie the grain in bundles. This knotter tied a double bow knot and in its day was considered the best available. J. Fred Seiberling the First had forty some patents on farm implements by 1896.

During these years of manufacturing farm equipment, C. W. Seiberling became interested in the rubber business with his father, J. F. Seiberling, and founded the Akron India Rubber Company. This was in 1895 and was later sold. In 1898, F. A. Seiberling and C. W. Seiberling, at the ages of 38 and 37, founded the Goodyear Tire & Rubber Company and in the course of the following 23 years built it into a great corporation and the largest tire company in the world. In 1921, these same men founded the present Seiberling Rubber Company. Many of them are still connected with the company.

COMMERCE DEPARTMENT REPORTS ON GERMAN NEOPRENE PROGRESS

An artificial leather, made of paper impregnated with synthetic latex, was considered by the Germans to be the most promising application of neoprene, according to a report released recently by the Department of Commerce on German neoprene development. The new product is durable and, in the Germans' opinion, superior to leather in some respects. The report was prepared by M. A. Younker and N. A. Copeland for the Joint Intelligence Objectives Agency.

In making the artificial leather, paper was impregnated with neoprene latex, then dried and hot pressed at about 120° C. Bags and briefcases made from this material several years ago were found by the investigators to have remained in excellent condition. Some batches of artificial leather were observed to lose their strength and flexibility with age, apparently because hydrochloric acid was split off from the compound. Careful curing of the neoprene and addition of magnesium oxide was said to increase the stability of the material.

Another development, still in the laboratory stage, was a textile substitute made by heating viscose rayon fibers treated with neoprene latex and pressing them into a porous fabric. The material appeared to be strong and quite durable. Neoprene was also used to some extent in waterproof textile coatings, textile printing, gaskets and packing, and adhesives. Neoprene cement was used in attaching buna to submarine hulls to avoid short wave detection.

Tests were made by the Germans on the relative value of natural rubber, buna, and neoprene-coated buna bags for curing tires. It was concluded that neoprene-coated bags resisted sulfur and other curing agents better than pure buna bags and had more than twice the life of natural rubber curing bags.

Pilot plants for neoprene research were built before the war by I. G. Farbenindustrie at Hoechst and Oppau. Bata had two plants at Zlin, Moravia, which produced 30 tons of neoprene a month for shoe manufacture. The production layout at Hoechst, the only neoprene plant visited by the investigators, was found to be very poor. It is criticized both from the point of view of operating efficiency and of safety. The investigators describe the plant as essentially an overgrown laboratory model, rather than a pilot plant which could be built on a larger scale for commercial production.

Since the German war economy had been committed to the production of buna for tires and other major uses, neoprene was considered only for specialty purposes. Its development apparently was not favored by the authorities, who refused I. G. Farbenindustrie the construction materials needed to expand neoprene capacity at Hoechst for the production of artificial leather.

Coming Events

Sept. 20. Philadelphia Rubber Group, Annual Outing, Oak Terrace Country Club, Ambler, Penna.

Sept. 21. Connecticut Rubber Group, outing, Meadow Brook Country Club, Hamden, Conn.

Oct. 1. Los Angeles Rubber Group, Hotel Mayfair, Los Angeles, Calif.

Oct. 4. Boston Rubber Group, Copley Plaza Hotel, Boston, Mass.

Oct. 7-12. 34th National Safety Congress, Chicago, Ill.

Oct. 18. New York Rubber Group, Hotel McAlpin, New York City.

Oct. 18. Detroit Rubber & Plastics Group, Hotel Detroit-Leland, Detroit, Mich.

Oct. 25-26. Society of Rheology, Annual Meeting, Hotel Pennsylvania, New York City.

Dec. 2-6. American Society of Mechanical Engineers, Annual Meeting, New York City.

Dec. 6. Boston Rubber Group, Xmas Party, Boston, Mass.

Dec. 13. New York Rubber Group, Xmas Party, Hotel McAlpin, New York City.

The investigator's 30-page report (in English) is accompanied by two supplements (in German), consisting of articles on particular phases of German neoprene production, flow sheets, graphs, and diagrams. Copies of the report (PB-19857) with the supplements may be obtained from the Office of Technical Services, Department of Commerce, Washington 25, D. C., for $25 in photostat form and $4 in microfilm form; or without the supplements for $2 in photostat form and 50c in microfilm form.

Incorporate Van Cleef Bros.

Van Cleef Bros., 7800 South Woodlawn Ave., Chicago 19, Ill., has been incorporated after operating as a partnership since 1910. The concern will now be known as Van Cleef Bros., Inc. Officers of the company are Noah Van Cleef, president and treasurer; Felix Van Cleef, vice-president, and Paul Van Cleef, vice-president and secretary.

Acquires Tire Cord Concern

United Elastic Corp., Easthampton, Mass., has purchased the West Boylston Manufacturing Co., Montgomery, Alabama, tire cord manufacturers. When present orders for tire cord are filled, the company plans to convert the plant partially to the production of weaving yarns.

LITCHFIELD PREDICTS DEMAND WILL CONTINUE THROUGH 1947

On the basis of a statistical study prepared by the Goodyear Tire & Rubber Co., P. W. Litchfield, chairman of the board, predicted in Akron recently that the unprecedented demand for tires which has carried this year's production of the industry to record levels will continue well through 1947. The 1947 tire demand is estimated at 83,000,000 units, within 4% of this year's estimated all-time high of 86,500,000.

According to the study, next year's demand will call for the production of 67,000,000 passenger car tires, as compared with 68,000,000 passenger car tires in 1946; 12,000,000 truck tires against 14,000,000 this year; and 4,000,000 farm tires compared with 4,500,000 scheduled for production in 1946.

While the demand for replacement passenger car tires should return to normal next year, the increased output of new automobiles should boost original equipment tire production from an estimated 12,500,000 units this year to 27,000,000 in 1947, Mr. Litchfield said. These figures are based on an estimated production of 2,350,000 new cars in 1946 and 5,000,000 cars in 1947. Export demand, it is estimated, will increase from 800,000 to 1,000,000 tires and the industry should be able to restore normal inventories, building these up from 700,000 this year to 5,000,000 next year.

Although tire production this year is at an all-time high, it is below the industry's present manufacturing capacity, Mr. Litchfield pointed out. Raw material shortages have prevented tire manufacturers from attaining maximum output. Natural rubber importations have been below expectations due to the Netherlands East Indies political situation, synthetic rubber production has been held back by the alcohol shortage, and supplies of fabric and bead wire have been insufficient to meet the requirements of the tire makers. If these shortages are overcome and labor conditions remain normal, the industry has ample plant capacity to meet all expected demands for tires, according to Mr. Litchfield.

Sponsors Television Programs

A new series of television programs, entitled "Serving Through Science," is being sponsored by the U. S. Rubber Co. in cooperation with the Encyclopedia Britannica. The programs, which started on August 27, will be televised each Tuesday at 9 P. M., E.D.T., for six weeks in New York City over WABD and will feature Dr. Miller McClintock, research consultant to the Encyclopedia Britannica. In addition, the programs will be telecast in Philadelphia, Penna., over WPTZ, and in Washington, D. C., over W3XWT.

WITCO CHEMICAL CO. OPENS NEW SERVICE LABORATORY

Witco Chemical Co. has announced the opening of a Technical Service Laboratory at 719 First Avenue, New York 17, N. Y., under the direction of Dr. L. H. Cohan, formerly director of research for the Continental Carbon Co. The laboratory is equipped with the most modern facilities for studies in rubber, plastics, paint, and general chemical work.

The rubber division of the laboratory, in addition to the usual facilities—plasticity, stress-strain, tear, hardness, breaking set, permanent set, compression set, flex crack resistance, abrasion resistance, oxygen bomb aging, forced draft air oven aging, pendulum rebound, and heat generation apparatus — contains several innovations not ordinarily encountered.

The physical testing is carried out in a room air conditioned for a temperature of 80±2° F. and 40±10% humidity the year around. Curing is carried out in a press completely enclosed in a heavily insulated cabinet, so that both the press platens and the immediately adjacent air space are maintained at constant temperature. Sample molds are all chromium plated, hinged, and provided with handles so that cavity surfaces cannot be scratched or dented during use. Also of interest to rubber technologists is a hydraulic press specially adapted for dieing out test samples with continuously smooth action which produces a cut edge consistently free from imperfections.

The paint laboratory is equipped with a three-roll mill, ball and pebble mills, mixing equipment for batches up to five gallons, and apparatus for making the usual tests, such as tinting strength, color intensity, oil absorption, wet and dry hiding power, hardness of paint film, fineness of pigment, consistency, etc. The accent is on the accuracy and dependability best obtainable from the most modern equipment.

A separate publications department in the Witco Technical Service Laboratory will prepare papers for scientific journals, manuals, bulletins and technical service reports for use by the rubber, plastics, paint and other industries.

Service Award to Werkenthin

The Meritorious Civilian Service Award has been given by the U. S. Navy Department to Theodore A. Werkenthin, principal materials engineer of the Navy's Bureau of Ships. Mr. Werkenthin, who is charged with research, development, specification writing, and all other phases of work with natural and synthetic rubber and rubber-like materials, has been associated with the Navy since 1937. A series of articles by Mr. Werkenthin on testing procedures for the evaluation of rubber sponsored by the Navy's Bureau of Ships is currently appearing in RUBBER AGE.

Plans Mill Room Building

U. S. Rubber has announced plans for the erection of a modern $1,500,000 mill room building to service its footwear plant at Naugatuck, Conn. Construction of the three-story steel and brick building will start as soon as preliminary engineering work is completed. The building will contain 15,000 square feet on each of its three floors. Work on the new structure is expected to take from twelve to eighteen months, depending upon the delivery and availability of critical building materials.

Quincy Products Co. Formed

The Quincy Products Co., Inc., has been formed at Quincy, Mass., for the manufacture of rubber and plastic soles and heels and coated fabrics. Officers of the new firm include Howard W. Berger, president; Irving W. Porges, vice-president, and S. G. Rosenberg, treasurer. Mr. Berger was formerly associated with the Plymouth Rubber Co., Canton, Mass., the Middletown Rubber Co., Inc., Middletown, Conn., and the General Cable Corp., Bayonne, N. J.

Dutch Tire Stock All Taken

A 2,000,000-guilder (approximately $825,000) public offering of shares at 155% in the new N. V. Nederland-Amerikaanische Autobandenfabriek-Vredestein recently made in Amsterdam has been considerably oversubscribed. The tire plant, to be built at Enschede in Eastern Holland, is a joint venture of the B. F. Goodrich Co. and the Dutch Vredstein Co.

Offers Segregated Oils

The Chemical Oil Processing Co., 134 Royce Ave., Toronto, Ontario, Canada, is currently offering a complete line of segregated oils, in both fast-drying and non-drying fraction types. The latter is said to find application in a wide range of rubber products, including proofed goods and footwear. Two kinds of non-drying fractions are currently available, i.e., Olivene and Plastoil. Olivene is a non-drying saturated component obtained by the segregation of Canadian linseed oil and may be used as a replacement for such soft oils as castor, olive, peanut and rapeseed oil. Plastoil is a non-drying plasticizing oil obtained by air-blowing the non-drying component obtained by the segregation of Canadian linseed oil and replaces oils such as blown castor oil and blown rapeseed oil. Literature and samples of these materials is available from the manufacturer.

Thomas Lord Elected President

Thomas Lord, vice-president of the Lord Manufacturing Co., Erie, Penna., has been elected president of the company, succeeding his father, H. C. Lord, who has been appointed chairman of the board. Established in 1925, the company now manufactures suspensions and mountings which are based on inventions and developments of H. C. Lord. These suspensions and mountings utilize rubber between the joints of the metal parts to absorb shock and prevent the transfer of noise and vibration to adjoining structures and areas. Another feature of the Lord inventions is a rubber-to-metal bond.

View of part of new Technical Service Laboratory of the Witco Chemical Co.

SURVEY CONTAINS SUMMARY OF ESSENTIAL RUBBER FACTS

The essential facts of natural and synthetic rubber, including current prices, current costs, longer term costs, production, and requirements, are summarized and compared in a survey which has been made available by Merrill, Lynch, Pierce, Fenner & Beane, commission brokers in commodities and securities at 70 Pine St., New York 5, N. Y.

Discussing current prices of natural rubber, the survey points out that the Reconstruction Finance Corporation would like the price raised to about 26c a pound, or high enough to cover the cost of natural rubber, which is 23½c a pound, f.o.b. Far Eastern port, or between 25c and 26c a pound delivered in this country. On the other hand, the Office of Price Administration, with price of end products in mind, is said to have suggested that the RFC continue to sell at the present ceiling until existing stocks are exhausted. When present stocks are gone, the OPA would raise the ceiling, if the RFC would make a compensating reduction in synthetic rubber prices. It is pointed out that the rule of thumb basis of OPA figuring has been that GR-S could be used within 4c of natural rubber and GR-I within 2c.

Comparing the long-term costs of natural and synthetic rubber, it is indicated that the more efficient producers of estate rubber will probably produce at least 500,000 long tons a year at 8c to 9c per pound, given economic, modernized cultivation methods and uninflated staffs. In the case of synthetic rubber, it is estimated that the cost of petroleum-based GR-S will vary between 12c and 16c, with debatable tendency to reduce these figures, while DuPont is said to have estimated that if natural rubber should sell at 15c, approximately 30,000 tons of neoprene could be sold at 27½c, due to extension of uses and improvement in quality.

Although relative values of natural and synthetic rubber are still undetermined and in a state of flux, it is pointed out that until recently natural rubber, with important exceptions, has been preferred for most purposes — especially tires, and more particularly truck tires—either 100% or in part. Natural rubber is said to be up to 15% cheaper in tire manufacture, due to ease in handling and being somewhat lighter in weight. In general, the advantages of synthetic rubber is that it is capable of being produced for a specific end use and it has greater uniformity.

From the standpoint of production, the present relative prices enable natural rubber to compete comfortably, according to the survey, but under future competitive conditions the natural rubber producer is said to view cost uncertainties with some misgivings, while realizing that he must lower them to hold his position. The synthetic rubber producer is expected to require some form of government support and encouragement and full freedom of action in research. The survey indicates that were it possible for natural to sell at two thirds the cost of GR-S, it is likely that a tariff of 40-50% ad valorum, or its indirect equivalent, would be required to keep the majority of United States synthetic plants in commercial operation.

Concluding with a comparison of United States and British rubber policy, the survey points out that Great Britain, acting under the necessity of conserving dollar exchange in order to encourage exports and production in sterling areas, and to further high policy, will confine imports to natural rubber, beginning October, 1946.

In the United States, policy is in the process of slow formation. The issue of national security requires decision by Congress as to size and maintenance of a synthetic industry whose production shall be continuously used. It is recommended that since a National Rubber Supervisory Body appears very desirable, such a body should be empowered to supplement policy before June 30, 1947, when the War Mobilization and Reconversion Act (under which the present Inter-Agency Policy Committee derives its authority) expires. Otherwise, as long as rubber is in critical supply and its use is controlled under the Second War Powers Act, an immediate decision is not vital; the Act does not expire until two years following the official termination of the war.

Principal methods of assistance to synthetic rubber producers in the United States are believed to be: (1) Tariff; (2) Import quotas; (3) Excise tax; (4) Import monopoly; (5) Certificate plan; (6) Industry code; (7) Subsidy; (8) Product specification. Each has serious objections and difficulties, but the Inter-Agency Policy Committee favors use of product specification, or subsidy, or both, to the exclusion of other methods.

Status at Sarnia

The synthetic rubber plant at Sarnia, Ontario, operated by the Polymer Corporation, is producing at a rate 35% above designed capacity, according to E. R. Rowzee, director of research of the Crown-owned company. Thus far Polymer Corp. has been able to supply all the requirements of the Canadian rubber plants, but has been able to supply foreign markets with only a small percentage of potential requirements. Polymer is selling more than $20,000,000 worth of synthetic rubber annually, and in addition to paying all costs and setting aside reserves for depreciation still manages to show a fair profit.

PASSENGER TIRE PRODUCTION DECREASED 13.67% IN JUNE

Production of passenger car tires by American manufacturers in June decreased 13.67% under the previous month, dropping from 5,700,306 units in May to 4,921,297, according to the latest statistical report of the Rubber Manufacturers Association. Production of such tires for the first half of 1946 was estimated at 30,737,117 units, as compared with 10,044,695 units produced during the corresponding period of 1945. The report reveals that the industry is geared to produce about 69,200,000 passenger car casings by the end of this year.

Truck and bus tire production decreased 18.06%, totaling 1,114,797 units, as compared with 1,360,482 units produced in May. Production of truck and bus tires for the first six months of 1946 amounted to 7,702,726, as compared with 10,118,845 units produced during the first half of the previous year. Total production of automotive pneumatic casings in June amounted to 6,036,094, a decrease of 14.51% under the previous month.

The production of passenger car, truck and bus tubes decreased 11.65%, from 6,462,794 units in May to 5,709,905 units in June. Production of passenger car, truck and bus tubes during the first half of 1946 totaled 33,640,356, as compared with 19,272,591 for the same period of 1945.

In line with decreased production of tires and tubes, June shipments of passenger car tires amounted to 5,045,542 units, a decrease of 11.11% under the 5,676,260 units shipped during May, while inventories at the end of June decreased 4.03% to 2,290,220 units. Truck and bus tire shipments decreased 19.73%, from 1,356,058 units in May to 1,088,470 units in June, with inventories at the end of June increasing 2.85% to 1,019,009 units. Shipments of passenger car, truck and bus tubes totaled 5,700,318 units in June, a decrease of 9.20% under the previous month, while inventories at the end of June amounted to 4,376,589 units, an increase of .07% over the end of May.

Export shipments of all types of tires, with the majority in truck and bus sizes, amounted to 134,273 units in June and represented approximately 2% of total shipments. For the first half of 1946, export shipments of tires totaled 664,095 units, as compared with 196,603, units for the first six months of 1945.

Start Producing Rubber Thread

The Andrews-Alderfer Processing Co., 120 Ash St., Akron 8, Ohio, has announced that it is now in production in its new, modern plant of a new type of rubber thread. Made from latex, the new thread is formed from multiple plies and is said to be the only alkaline thread available. It also features longer lengths, having over 1,000 yards in each chain. Sterling Alderfer is president and treasurer of the company.

NEW COMPANY ESTABLISHED TO HANDLE NATURAL LATEX

Moving to meet the requirements of a vastly expanded market for natural rubber latex, M. Rothschild & Co., Inc., and Arthur Nolan have organized a new company to handle the distribution of this raw material in the United States. Incorporated under the name of Latex Distributors, Inc., the new company will have its offices at 80 Broad St., New York 4, N. Y.

Both incorporating parties have had extensive experience in the latex field. M. Rothschild & Co. has been engaged actively in export-import for thirty years. The company is a large shippers' agent, representing numerous Far Eastern shippers. Since 1932, it has been an importer of large quantities of liquid latex.

Arthur Nolan, vice-president and general manager of the new organization, has been engaged in the liquid latex field for more than eleven years. He was with the U. S. Rubber Co. for ten years, spending the last three of those years as manager of the company's latex and dispersions sales. He served as principal latex specialist with the War Production Board for one year and has been latex consultant to United States Government agencies for the past four years.

Mr. Nolan has left for England, France and Holland to consult with European managers of Far Eastern plantations on United States latex requirements. From London, he will proceed to Calcutta, Singapore and the Dutch East Indies to school production plants in the preparation of high quality latex suitable for use by manufacturers in the United States. Mr. Nolan, who expects to be abroad for about four months, has pointed out that American manufacturers are in immediate need of large quantities of natural rubber latex to meet their immediate requirements for production of automotive, medical and surgical rubber products, tires, adhesives, shoe products and dipped goods.

Use of Latex Expanding

Put to general commercial use hardly more than fifteen years ago, latex enjoyed a rapidly expanding market up to 1941 when the sweep of Japanese army forces into rubber producing areas cut off the bulk of natural latex supplies. As large as pre-war consumption had become, however, Mr. Nolan has predicted that current demand would run post-war consumption up to at least five times beyond the 1939-1940 level as soon as natural latex becomes available in sufficient supply.

One of the largest increases in consumption is expected to be in the latex foam cushioning field where adaptations have been made in automobiles, trains and aircraft as well as in public and household upholstering and bedding.

Arthur Nolan

vice-president and general manager of newly-formed Latex Distributors, Inc.

FTC Concludes Black Hearings

Hearings on charges made by the Federal Trade Commission against Carbon Black Export, Inc., which have extended over a period of more than two years, were concluded in Washington on August 21. Carbon Black Export, which is reported to export approximately 85% of all carbon black shipped from the United States, was charged with violating the anti-trust provisions of the Export Trade Act (Webb-Pomerene Law) by entering into contracts, agreements and understandings and engaging in acts and practices in restraint of the export trade of domestic competitors. It was also charged with restraint of trade within the United States. Date of final decision on the hearings has been put at anywhere from several months to a year.

Changes Corporate Name

Stockholders of the Riverside & Dan River Cotton Mills, Inc., Danville, Va., have approved a change in the company's corporate name to Dan River Mills, Inc. A plan of recapitalization, including a five-for-one split up of outstanding common stock, increasing the number of shares to 1,500,000 of $5 par value was also approved.

Moves Plant to Wadsworth

Bearfoot Sole Co., Inc., has moved all its operations from Akron to its recently completed plant at Wadsworth, Ohio. At the new plant the company will continue to produce its full line of rubber soles and heels, reclaimed rubber, rubberized fabrics, and shoe cements. Edwin Calvin is president of the company.

UNIQUE CROSS-SHAPED DE-ICERS RIDE TAILS OF CONSTELLATIONS

Riding the tails of the Lockheed Constellations, now resuming service on the nation's airways, are specially-tailored empennage cross De-Icers, so complicated that they required two years to work out their production methods. These special De-Icers have been installed on all Constellations since they first went into commercial service in February, 1946.

Because of the three-dimensional nature of the job—the inflatable ice-breaking tubes run in four directions over raised surfaces and varying contours—it was impossible to provide accurate blueprints or templates.

For curing, a metal form about a yard square had to be made of stainless steel, since more ductile metals would have suffered harmful reactions in vulcanizing because of the particular rubber compound used. Finding that ordinary solder could not stand the 300° C. temperature encountered in curing, the company finally built an accurate form and afterward used it as a pattern for other forms with the aid of a plaster cast of the tail assembly and the use of silver solder.

These special De-Icers can now be produced at the rate of four per shift.

Approve Neoprene Wire Covering

Underwriters' Laboratories, Inc., has approved the use of a neoprene covering on Types R and RH wires as an emergency alternate construction. In view of the experience which most manufacturers have had with the use of neoprene in connection with wires produced for Army and Navy use and with flexible cord jackets, Underwriters' Laboratories has stated that it is not necessary for the neoprene-covered wire to be submitted for review, but it will be checked by the Laboratories' inspectors as part of the factory inspection and label service program.

Revertex Opens New Plant

Revertex Corporation of America, manufacturers of Revertex latex compounds and distributors of latex, recently opened its new plant and laboratories at Hicksville, Long Island, N. Y. The activities of the company's former plants at Long Island City and Glendale, L. I., have been consolidated at the new Hicksville plant. The main offices of the company remain at 274 Ten Eyck St., Brooklyn 6, N. Y.

Corporate Name Changed

Rheestone Thread Corp., Franklin St., Warren, R. I., has changed its corporate name to the Rhee Elastic Thread Corp. Daniel Rhee is president and general manager of the company, which manufactures cut thread.

NAMES IN THE NEWS

SAMUEL G. FRENCH, formerly chief of the Rubber Section of the Office of International Trade of the Department of Commerce, has returned to his pre-war position as president of H. W. French Co., Inc., crude rubber dealers at 347 Madison Ave., New York 17, N. Y.

HAYDEN B. KLINE, who has been a vice-president of the Industrial Rayon Corp., 9801 Walford Ave., Cleveland, Ohio, since 1930, has been appointed by the company to the newly-created post of executive vice-president.

FRED V. LARKIN, formerly chief chemist of the Atlantic Tubing & Rubber Co., Cranston, R. I., has become associated with the Beebe Brothers Rubber Co., Nashua, N. H., as superintendent.

WARREN W. BURR, recently discharged from the Navy and previously vice-president of the Moran Paint Co., Dayton, Ohio, has joined the Goodyear Tire & Rubber Co., Akron, as head of the section on development of protective coatings and Pliolite resins.

KENNETH W. GREEN, who has been associated with the Electric Storage Battery Co., Philadelphia, Penna., since 1927, most recently as manager of its engineering sales and railway divisions, has been appointed assistant purchasing agent by the company.

ERNEST A. MOLLER, formerly manager of the cycle tire sales department of the Goodyear Tire & Rubber Co., Akron, has been named sales manager of the Pharis Tire & Rubber Co., Newark, Ohio.

H. D. GLASS, who has served as sales manager of the Seiberling Latex Products Co., Akron, for the past seven years, has been appointed by the company to the post of vice-president in charge of sales.

STELLA ALOGDELIS, who formerly held a research fellowship in malaria at the University of North Carolina, has joined the Goodyear Tire & Rubber Co., Akron, and will work in the synthetic rubber research section on development of new and improved polymers.

M. A. KIRKLAND, formerly production manager of the Winnsboro, S. C., textile plant of the U. S. Rubber Co., has been named manager of that plant, in full charge of operations.

A. J. BAKER, manager of the Du Bois, Penna., plant of the B. F. Goodrich Co. since 1944, has been appointed manager of the company's rubber thread sales.

MAX F. MOYER, who was discharged from the Army with the rank of colonel early this year and subsequently was appointed assistant manager of the builders supply department of the chemical products division of the Goodyear Tire & Rubber Co., has been named manager of the company's motorcycle, bicycle and toy tire department.

A. J. YOUMANS, formerly personnel director of the Freydberg Bros.-Strauss Co. and previously senior time study engineer at the Passaic, N. J., plant of the U. S. Rubber Co., has been appointed head of the personnel department of the H. O. Canfield Co., Bridgeport, Conn.

C. J. PHILLIPS, who has been serving as production superintendent at the Clarksville, Tenn., plant of the B. F. Goodrich Co. since 1939, has been named manager of the company's plant at Du Bois, Penna.

JAMES J. ROBSON, recently discharged from the Army with the rank of lieutenant colonel, has been named manager of the newly created West Coast Division of the Manufacturers' Sales Department of the Firestone Tire & Rubber Company of California, with headquarters in Los Angeles.

R. S. KEEFER, formerly assistant sales manager of the Hazard Insulated Wire Works Division of the Okonite Co. at Wilkes-Barre, Penna., has been appointed sales manager of that division.

DAVID HAYES, formerly commercial engineer in the home laundry equipment division of the General Electric Co., has become president of the Preventive Maintenance Co., Bridgeport, Conn.

P. M. DINKINS, who has been associated with the American Cyanamid Co. since 1923, has been made president and a director of the Jefferson Chemical Co., Inc., 30 Rockefeller Plaza, New York 20, N. Y., which is jointly owned by American Cyanamid and the Texas Co.

F. KENNETH BRASTED, secretary of the public relations department of the Rubber Manufacturers Association, spoke on "The Opportunities for Research in the Textile Field" on a radio program, called "Textile Topics," which was broadcast over stations throughout the South during the week of August 26.

CLYDE HOOVER, formerly chief chemist of the Essex Rubber Co., Trenton, N. J., is now associated with the Carr Manufacturing Corp., Bristol, R. I., in a similar capacity.

William R. Bowen

whose appointment as manager of the Akron branch sales office of Farrel-Birmingham Co., Inc., was announced last month.

D. D. REICHOW, manager of industrial relations of the B. F. Goodrich Co. since 1941, has been named assistant to J. W. KEENER, vice-president in charge of employee relations.

WENTWORTH BROWN, vice-president of the Brown Co. and production manager of the company's plant in Berlin, N. H., since 1942, has been named vice-president in charge of manufacturing. He has been connected with the company since 1929.

DR. JEROME C. HUNSAKER, head of the Departments of Mechanical Engineering and Aeronautical Engineering at Massachusetts Institute of Technology, has been elected a director of the Goodyear Tire & Rubber Co.

WILLIAM H. MASON, public relations director for the General Tire & Rubber Co. for the past few years, has left that company to open advertising and public relations offices in Mexico City.

Footwear Plant for Sale

The government-owned rubber footwear manufacturing plant at Johnson City, N. Y., which was operated by the Endicott Johnson Corp. during the war, has been offered for sale by the War Assets Corporation. Situated on a site of approximately 10 acres, the plant consists of a one-story main building, an office annex, a rubber mill annex, and a boiler house addition. Production machinery and equipment and laboratory and testing equipment are included in the offering.

PANTASOTE AND TEXTILEATHER TO CONSOLIDATE ACTIVITIES

Announcement was made on August 28 of conclusion of negotiations for a merger of the Pantasote Company of Passaic, N. J., and the Textileather Corporation of Toledo, Ohio, into a new company to be named Pantasote Plastics, Inc. With its subsidiaries the new company will be one of the nation's major producers of artificial leathers and the leading independent manufacturer of plasti-coated fabrics and vinyl resin film, it was declared.

The projected consolidation was announced jointly by Hans Wyman and J. D. Lippman, presidents of Pantasote and Textileather, respectively. It will be carried out through an exchange of shares of the two present companies and those of the Astra Realty Company, from which Pantasote leases its plant and equipment.

Under the plan 385,158 common shares of Pantasote would be exchanged for 770,316 common shares of the new company, on a two-for-one basis; 117,867 common shares of Textileather would be exchanged for 353,601 common and 47,146⅔ convertible $20 par preferred shares of the new company, on a three-for-one basis for the common plus ⅖ preferred share for one common share; 5,000 common shares of Astra Realty would be exchanged for 60,000 common shares of the new company, on a 12-for-one basis.

A formal offer to exchange will be made to public holders of the securities of all three companies by a prospectus after the effective date of a registration statement being prepared for filing with the Securities and Exchange Commission. The plan's consummation is conditioned upon acceptance of the exchange by at least 80 per cent of the outstanding securities.

Rubber Unchanged by A-Bomb

In a statement made recently in Akron, Harry N. Stevens, research coordinator of the B. F. Goodrich Co., who acted as the sole representative of the rubber industry at the atom bomb tests in the Pacific, declared that tires and various rubber products came through Operation Crossroad off Bikini Lagoon without any changes in appearance. Mr. Stevens pointed out, however, that it will take years to finally evaluate all the scientific data gathered at these tests.

World Bestos Moves Plant

The World Bestos Corporation, manufacturers of brake lining and other automotive specialties, has closed its plant in Paterson, N. J., and moved to a new and larger factory at New Castle, Indiana. The management personnel, headed by Donald H. Spicer as president, remains unchanged. The company is affiliated with the Firestone Tire & Rubber Co.

Sets Up Consulting Service

Warren S. Lockwood

Warren S. Lockwood has resigned as executive vice-president of the Rubber Manufacturers Association and has organized a consulting service in the foreign trade field, with temporary headquarters at 1000 Shoreham Building, Washington, D. C. The firm, which will maintain offices in Washington and London, will offer highly specialized services to American exporters and importers in preparation of foreign market surveys and will also be of direct practical assistance to clients in the solution of world trade problems created by import duties, quotas, exchange and other barriers to the free flow of goods between this and foreign countries. Mr. Lockwood has served in London as U. S. Assistant Trade Commissioner for the Department of Commerce, and as attache for the Department of State at the U. S. Embassy there. He has also served the Department of Commerce in the Far East.

Kuckro Joins Cords, Ltd.

Gerard W. Kuckro, associated with the Royal Electric Co. for the past several years, has left that company and has joined Cords, Ltd., Inc., 780 Frelinghuysen Ave., Newark 5, N. J., as chief chemist. Prior to joining Royal Electric, Mr. Kuckro was associated with the Revertex Corporation of America for a number of years. Cords, Ltd., is currently completing installation of equipment at its plant for the manufacture of rubber and plastic insulated wire and cable.

Houdry Moves New York Offices

Houdry Process Corp. has moved its New York offices to 25 Broad St., New York 4, N. Y. Located at the new address will be the company's process design and project analysis divisions.

SURVEY INDICATES PREFERENCE FOR OPEN CLEAT DESIGN TREAD

In a recent nationwide survey conducted by Fact Finders, Inc., for the B. F. Goodrich Co., Akron, more than two-thirds of the thousands of tractor-owning farmers polled indicated a preference for the open-T-cleat design of tractor tire treads over the closed-T and button-style treads. The survey was conducted as part of the continuous Goodrich program of research in tire design.

Of those responding in the survey, 67.7% cast their votes for the open-T style, the one where space is left between the shank and the cross-piece of the T made by diagonal raised bars which meet at right angles. The closed-T style, where the bars are at the same angle but with no space between shank and cross-piece, was favored by 26.6%, while 4.2% of those replying liked the button-type tread, and 1.5% did not indicate any preference. In only four of the 48 states was there any marked variation from this better than two-to-one favor for the open-T.

The "self-cleaning" advantages of the open-cleat style were cited by more than half of those voting for it as their chief reason for favoring it, while about a third of these farmers cited "good traction," and one-sixth felt this style was "best all-around." Those voting for the button type introduced one new factor, saying that it had superior traction "in reverse."

Two Styrene Plants Sold

War Assets Administration has announced the sale of two surplus styrene plants for a total of $12,815,000. One at Texas City, Texas, was sold to the Monsanto Chemical Co. for $9,550,000, while the second at Kobuta, Penna., went for $3,265,000 to Koppers Co., Inc. The Monsanto plant at which 500 persons will be employed, will be used in the production of styrene for the Office of Rubber Reserve and for commercial sale. Only the styrene facilities of the Kobuta property, which was formerly operated by Koppers United Co., were concerned in the sale to Koppers Co. but WAA approved a special provision covering use by Koppers of certain common facilities at Kobuta. Koppers plans to employ 500 persons at Kobuta.

Acquires Stokes Rubber Assets

The Electric Storage Battery Co., Philadelphia, Penna., has acquired the properties, inventories and accounts receivable of the Jos. Stokes Rubber Co. from the Thermoid Co. According to S. W. Rolph, executive vice-president of Electric Storage Battery. the business will be continued at Trenton by Stokes Molded Products, which will produce the same hard rubber and plastics products manufactured hereto.

SOME INTERESTING PATENTS AVAILABLE FOR LICENSING OR SALE

For the past several months the United States Patent Office of the Department of Commerce, Washington, D. C., has been issuing a "Register of Patents" on a regular basis. The patents listed in the "Register," taken from the Official Patent Gazette, are offered by the patentees or assignees for license or sale. Descriptions of a number of such patents, which should prove of interest to rubber manufacturers and others in the rubber field, taken from recent issues of the "Register," follow herewith:

Eraser. (Pat. No. 2,099,613, Nov. 16, 1937.) Soft eraser reinforced internally or externally, or both, by addition of hard rubber which will wear down simultaneously with the body of the eraser, to reduce crumbling and breaking and prevent drying of softer material. Other suitable reinforcement materials and the creation of a variety of shapes are set forth.—Owner: Mrs. Julian S. Loewus, 2109 Suitland Terrace, S. E., Washington, D. C.

Finger Cot. (Pat. No. 2,157,293, May 9, 1939.) Made of thin rubber for protection of the manicure, the upper portion and end of tip of the article are reinforced and molded in the shape of a nail. Inside of the reinforcement is an accurately shaped groove for reception of the pointed end of nail, preventing damage to nail and polish. For easy insertion, the rear of cot has a bead formed thereon with flaps extending therefrom, the lower flap being longer than the upper one with small knobs at the ends. —Owner: Joseph G. Lenta, 410 Eighth Ave. W., Duluth 6, Minn.

Vibratory Massage Device. (Pat. No. 2,295,817, Sept. 15, 1942.) A vacuum cup operated entirely by suction or partial vacuum from any suitable source with no mechanical parts in the applicator. Vibratory massage will be applied simultaneously with constant partial vacuum to different parts of the body. The cup is constructed preferably of flexible, elastic material such as rubber. A valve controls admission of air to cup. Several modifications are shown.—Owner: Conrad P. Winther, office over First State Bank, Paynesville, Minn.

Medicated Filler Sole. (Pat. No. 2,109,657, Mar. 1, 1938.) Tapered filler of sponge rubber or the like is placed between outer and inner sole and extends from heel to shank. Plurality of longitudinal passages communicate with each other and with non-compressible chambers in which suitable medicament or deodorant is placed. In walking, air is forced forwardly by diminishing size and constriction of passages as filler is compressed from back to front and air comes into contact with foot through slots at forward end of filler. Chambers may be replenished with medicament or deodorant when necessary.—Owner: Joseph A. Perault, 767 Park Pl., Brooklyn 16, N. Y.

Abrasion Resistance Testing Apparatus for Insulated Wire. (Pat. No. 2,373,115, Apr. 10, 1945.) A wire is passed at right angles to an abrading means at a progressively increasing speed and tension to ascertain the wear resistance qualities of the insulation to prevent its failure in ordinary fabricating processes.—Owner: Harold K. Graves, 28 Floral Terrace, Tenafly, N. J.

Garment Protector. (Pat. No. 2,344,781, Mar. 21, 1944.) Deodorized dress shield. Absorptive. Inner side coated with suitable adhesive for attaching to garment by pressing adhesive flaps against material. Easily detached by pulling from fabric. May be made of paper for disposal after wearing or of washable cloth.—Owner: Eunice G. Mullen, c/o Elias Kahn, 505 W. 52nd St., New York 19, N. Y.

Automobile Cover. (Pat. No. 2,243,981, June 3, 1941.) Conforms generally to streamlined automobiles and is made of panels of flexible, weatherproof fabric joined by stitching and zipper-type fasteners. Elastic material at lower edges of the panels insures snug fit around the bottom. While cover is in position on car, provision is made for entering, exposing windshield, lights, and license plate for short trip if necessary.—Owner: Bridgie Rowan, 3725 North Magnolia Ave., Chicago 13, Ill.

Seamless Rubber Figure. (Pat. No. 2,152,311, Mar. 28, 1939.) A doll, puppet or any type of inanimate figure the casing of which may be molded without seams by pouring or spraying layers of vulcanized liquid latex into a hollow plaster of paris or porcelain mold in which the outline or shape of the figure has been preformed. The figure may be removed without damage by manually pulling it from the mold since at this stage the figure is collapsible. To aid in separating arms and legs from the mold, flexible tapes are inserted in the arms and legs during the process. Figure may be later stuffed with wool, particles of sponge rubber, cotton, etc. The head, arms, and legs may be cast and stuffed separately and joined to body by concealed and waterproof joints. Modifications shown.—Owners: Emanuel Jacobson and Harry Jacobson. Address correspondence to Harry Jacobson, 150 Nassau St., New York 7, N. Y.

Resilient Cushions for Beds, Chairs, or the Like. (Pat. No. 2,156,664, May 2, 1939.) Inexpensive construction utilizes a number of endless rubber strips or bands which are disposed with edges upright and the looped ends anchored in slots or secured by staples to frame of chair, foldable cot, mattress or other cushioning and supporting means. A covering may be provided. Resiliency depends on degree of tensioning. May be easily removed, repaired or replaced.—Owner: Thomas J. Litle, III, c/o Household Products, Inc., 631 Penobscot Bldg., Detroit 26, Mich.

Electrical Tire Pressure Indicator. (Pat. No. 1,954,153, Apr. 10, 1934.) Pressure indicating gauge is mounted on vehicle dashboard and operates in a manner similar to an electric fuel gauge. One end of its central coil is connected to the ignition switch and battery, the other to a switch arm movable over a number of contacts (corresponding to the wheels and spare of the vehicle) in communication with a T-shaped element screwed to the air valves of each tire. With this device the driver may know the pressure of any tire at any time, whether vehicle is in motion or not. Air may be added to tires without disturbing arrangement.—Owner: Paul E. Taylor, Route No. 4, Box 16, Memphis, Tenn.

Antiskid Apparatus. (Pat. No. 2,275,834, Mar. 10, 1942.) Antiskid chain arrangement for automobile wheels and the like consists of a combination of two rings to which a series of small plates carrying cross chains are detachably fastened. The rings are split in half and permanently carried by the wheels. To attach the rings, the tires are partially deflated and after hook portions on the periphery of the rings have been placed between the tire beading and edge of the rim the tires are fully inflated. The rings may become an integral part of the wheels if desired.—Owner: James F. Alexander, 84 Chestnut St., Indian Orchard, Mass.

Holder for Keys or the Like. (Pat. No. 2,291,896, Aug. 4, 1942.) Small, flat compact case for enclosing and pivotally holding keys in individual compartments. Any compartment may be opened to permit use of a selected key even in darkness without necessity of handling other keys, the cover of each compartment being notched to render such preselection possible. Case may be closed while key is in use. May be made of plastic, leather, metal or rubber.—Coowner: Robert Henderson, 165 Broadway, New York 6, N. Y.

Antiskid Shoe Device. (Pat. No. 2, 258,322, Oct. 7, 1941.) Flexible fabric has uniformly spaced bands of an elastic material. Open-toed, device is shaped to fit around toe portion of woman's shoe. A resilient strap around heel holds device in place, preventing movement of front portion. May be easily compacted and conveniently carried in purse. Toe portion may be closed by a zipper.—Owner: Lill K. Frolich, 307 Woodlea Hotel, 3552 Broadway, Kansas City 2, Mo.

Package for Attachment to Shower Nozzles. (Pat. No. 2,179,932, Nov. 14, 1939.) A bag of porous material contains bath salts or crystals for ready attachment to a shower nozzle to treat water as it sprays from shower. Bag is retained by means of a coiled spring or elastic adapted to fit various sizes of spray heads and withstand pressure.—Owner: Irene M. Hartman, 1497 Westvale Ave., Akron, Ohio.

PATENT ACCORD EXTENDS POLICY OF ALIEN PROPERTY CUSTODIAN

James E. Markham, Alien Property Custodian, has announced that the accord reached in London recently by representatives of twelve nations extends his office's policy of licensing former German-owned patents on a non-exclusive, royalty-free basis to citizens of other countries signing the accord. Represented at the London conference were Australia, Belgium, Canada, Czechoslovakia, Denmark, France, Luxembourg, The Netherlands, Norway, the Union of South Africa, the United Kingdom, and the United States.

The accord permits citizens of other participating countries to obtain the same benefits of royalty-free, non-exclusive licenses under vested German patents as the Office of Alien Property Custodian has been extending during the past four years to American citizens. In addition, American citizens will be able to secure the royalty-free use of former wholly German-owned patents issued by the other governments which participate in the accord.

Mr. Markham has indicated that the patents will continue to be available to American citizens as before. He added that the patents which are being licensed to citizens of other countries under the accord are those in which there are no lawfully acquired proprietary interests, licenses or claims held by non-Germans prior to August 1, 1946, which would conflict with the issuance of licenses.

In the various countries, more than 100,000 patents will be affected by the accord. Mr. Markham as U. S. Alien Property Custodian will continue to administer and license the former German-owned United States patents. He has estimated that about 19,000 German patents and patent applications seized by the United States are now licensable under the accord. During the last four years, it is estimated that approximately 8,000 seized German patents have been licensed one or more times to American citizens.

Organize Boehm-Smith, Inc.

A new company, known as Boehm-Smith, Inc., 358 Fifth Ave., New York 10, N. Y., has been organized by David Boehm to act as purchasing agents of rubber, textiles, chemicals, leather, machinery and other supplies for manufacturers of rubber footwear. Mr. Boehm was formerly associated with the Bristol Manufacturing Corp., Bristol, R. I., as purchasing agent.

Builds Organic Chemical Plant

A new building for the Organic Chemical Division of the J. T. Baker Chemical Co. has been erected at Phillipsburg, N. J. The company plans to use the new building for the manufacture of a new group of organic chemicals now in the pilot plant stage.

Lantz Joins Sun Rubber

William R. Lantz

William R. Lantz, formerly a member of the purchasing staff of the B. F. Goodrich Co., Akron, has been appointed director of purchasing for the Sun Rubber Co., Barberton, Ohio. Mr. Lantz joined Goodrich in 1929, serving in the company's accounting department for nine years before being transferred to the purchasing staff in 1938. During the war, he served in the Rubber Bureau of the War Production Board in Washington, D. C. He is a former director of the Akron Association of Purchasing Agents.

Palmer Resigns from Firestone

Dr. H. F. Palmer has resigned as assistant director of chemical laboratories of the Firestone Tire & Rubber Co., Akron, after serving with that company for 21 years. Joining Firestone as a research chemist in 1925, he was appointed chief chemist of the Xylos Rubber Co., the company's subsidiary, one year later. In 1942, he was named assistant chief chemist of Firestone, and two years later he was appointed to the position he held at the time of his resignation.

Form New Dunlop Company

The Dunlop Special Products Co., Ltd., was recently organized in England by the Dunlop organization to engage in the manufacture of rubber products required to conform to engineering standards. Products of this nature were developed on a substantial scale during the wartime period. The new company is capitalized at £50,000.

The New York office of the Goodyear aviation products division has been moved to Roosevelt Field, Long Island.

RMA REPORTS INDUSTRY EMPLOYS 66,000 WORLD WAR II VETERANS

Approximately 66,000 veterans of World War II are holding jobs in the rubber manufacturing industry a year after the war's end, according to a statement by the Rubber Manufacturers Association summing up the progress of the industry up to the anniversary of V-J Day in reconverting to peacetime production.

The RMA pointed out that rubber manufacturers employ about 300,000 persons in the United States. A sample survey reflecting employment among principal manufacturers shows that the industry to date has hired an estimated 90,000 veterans, or 30% of its total payroll. Approximately 32,000 were re-employed, returning to their old jobs upon their discharge from the service. The remaining 58,000 were new employees.

By a year after the war's end, separations had cut the total employment of veterans to its present number of 66,000, or about 22% of the total payroll. All manufacturing industries, durable and non-durable, are shown in the latest report of the Bureau of Labor Statistics to have employed 17.2% veterans. The same report shows separations averaging 7.1% per 100 veteran employees a month for all manufacturing, as compared with 6.1% per 100 monthly for the rubber manufacturing industry.

To Handle Foreign Operations

Firestone International Co. has been organized under the corporate laws of Maine to direct activities in all foreign countries for the Firestone Tire & Rubber Co. The organization will have charge of all Firestone plants outside the United States and Canada as well as the responsibility for all foreign branches and distributors. Samuel Broers, who has been head of Firestone's export operations for the last 24 years, has been named president of the new subsidiary, while John L. Cohill, who has supervised overseas operations in Argentina, South Africa and India during his 20 years of service with the Firestone Export Co., predecessor of Firestone International, has been appointed vice-president. George E. Porteck, a veteran of many years service with the Firestone Export Co., will be export manager of the new subsidiary.

Research Center Being Planned

Plans for the construction of a $17,000,000 research center at Henry Clay, Delaware, have been disclosed by E. I. du Pont de Nemours & Co., Inc. The announcement presages greatly stimulated research for synthetic fibers and plastics materials. It was intimated that construction is contingent upon approval by the Civilian Production Administration.

LIST OF SERVICES RUBBER INVESTIGATIONS PUBLISHED IN ENGLAND

During the wartime period the British Ministry of Supply issued a number of technical reports on rubber and rubber products under the title of "The Services Rubber Investigations." These reports, based on development work conducted by the Dyestuffs Division of Imperial Chemical Industries, Ltd., under the direction of Dr. W. J. S. Naunton, were issued in the form of manufacturers' and users' memorandums. For the period 1942 to 1945 a total of 16 manufacturers' memorandums and 15 users' memorandums were issued.

Copies of "The Services Rubber Investigations" were distributed as published without cost to all British rubber manufacturers and various Service departments. Of extreme importance in the over-all war effort, they were capably done and well printed. Because we believe that American rubber chemists and technologists will be interested in learning the nature of these reports, we are listing below the titles of all the manufacturers' and users' memorandums issued to date.

If demand for these reports is sufficient, the British Ministry of Supply may arrange to have them supplied through H.M. Stationery Office at a nominal cost. In any event, correspondence concerning these reports should be addressed to the Advisory Service on Rubber, Ministry of Supply, Berkeley Court, Glentworth St., London, N.W. I, England. A complete set of the reports is on file at our office and we will be glad to loan any copy to interested chemists in this country. The titles of the reports, divided into manufacturers' and users' memorandums, follow, the figure in parentheses indicating the number of the report:

MANUFACTURERS' MEMORANDUMS

(1) Hycar OR.
(2) Mixtures of Natural and Synthetic Rubbers.
(3) Stanco Perbunan.
(4) G.P.S. Rubber.
(5) Compounding Natural and Synthetic Rubbers to Resist Low Temperatures.
(6) Neoprene.
(7) Butyl Rubber (GR-I).
(8) Reclaiming Synthetic Rubbers.
(9) The Thermal Softening and Peptisation of GR-S.
(10) Extenders for Natural and Synthetic Rubbers.
(11) Thioplasts.
(12) The Oil Technique for GR-S.
(13) Sundry Synthetic Rubbers.
(14) The Vulcanisation of GR-S.
(15) The Vulcanisation of GR-I.
(16) GR-S Latices. Part I. Preliminary Evaluation.

USERS' MEMORANDUMS

(1) The Behavior of Synthetic Rubbers at Low Temperatures.
(2) Properties of Synthetic Rubbers and Rubber-Like Materials.
(3) The Behaviour of Rubber-Like Materials at Elevated Temperatures.
(4) The Behaviour of Synthetic Rubbers at Low Temperatures: Methods of Test.
(5) Natural and Synthetic Rubbers as Engineering Materials.
(6) Properties of Synthetic Rubbers and Rubber-Like Materials.
(7) Natural and Synthetic Rubbers at Low Temperatures: Compounding and Testing. Part I.
(8) Hardness Measurements of Natural and Synthetic Rubbers: Calibration of the Shore Durometer and the Correlation of Shore, B.S.I. and A.S.T.M. Methods.
(8) Identification and Estimation of Natural and Synthetic Rubbers.
(10) Shrinkage of Rubber in Precision Moulding. Part I. Variability in the Shrinkage of a Particular Natural Rubber Compound.
(11) The Heat and Oil Resistance of Natural and Synthetic Rubbers.
(12) Creep Phenomena—Natural and Synthetic Rubbers. Part I.
(13) The Effect of High Grade Aviation Fuels on Synthetic Rubbers.
(14) Shrinkage of Rubber in Precision Moulding. Part II. Dimensional Stability and Thermal Expansion of a Particular Natural Rubber Compound.
(15) Natural and Synthetic Rubbers at Low Temperatures. Part II. Effects of Prolonged Storage.

In addition to the reports listed above, the British Ministry of Supply also issued a report on "An Investigation of Liquid and Solid Bituminous Materials as Extenders for Rubber." Issued in January, 1945, this report is based on research carried out by the Research Association of British Rubber Manufacturers.

Develops Coating for De-Icers

A method for giving aircraft "de-icers" a protective coating in the summer, which may be peeled off when icing weather returns, has been developed by the B. F. Goodrich Co., Akron, and is being further tested by the company. The material, sprayed on like paint, is of aluminum color, and is said to keep out the ultra-violet rays of the sun which are the chief factors in the aging that results from direct exposure to the sun.

Swan Expands Facilities

Expansion of the Swan Rubber Co., Bucyrus, Ohio, has started with the construction of a new four-story plant, adjacent to the company's present factory. When the new plant is completed sometime this year, it will double the company's present floor space and enable the concern to hire an additional 200 persons.

Handles West Coast Sales

R. E. Bitter

who was recently appointed technical sales representative for the B. F. Goodrich Chemical Co., and who handles sales on the West Coast, operating out of 1248 Wholesale St., Los Angeles, Calif.

Solvaloid C Plasticizer

A new plasticizer, which is said to facilitate the production of plastisols with vinyl compounds, has been developed by the Socony-Vacuum Oil Co., 26 Broadway, New York 4, N. Y. Designated as Solvaloid C, the new plasticizer can be applied in almost any desired film thickness by simple knife or roller coating methods used in textile converting plants. Advantages claimed for Solvaloid C by the company are the following: elimination of expensive equipment, expensive and inflammable solvents and solvent recovery systems; easier control of finished dimensions, since the 100% solids content of the plastics material means that all the ingredients are components of the final film or casting, and continuous conversion at high speed from fluid to solid state.

Surplus Commodities for Sale

Numerous manufactured rubber products are being offered for sale by the War Assets Administration. Included among recent offerings were the following: 297,055 gallons of rubber vulcanizing cement; 481,518 pounds of cushion gum; 20,322 pounds of combination gum; 711,726 pounds of tread gum; 1,298,263 cured and semi-cured tire patches; 112,080 pounds of tire padding stock; 21,777 pounds of tire cord fabric; 570,364 civilian gas masks; and 794,385 impermeable rubber gloves. Detailed information on any of these sales may be obtained at any of the WAA Regional Offices.

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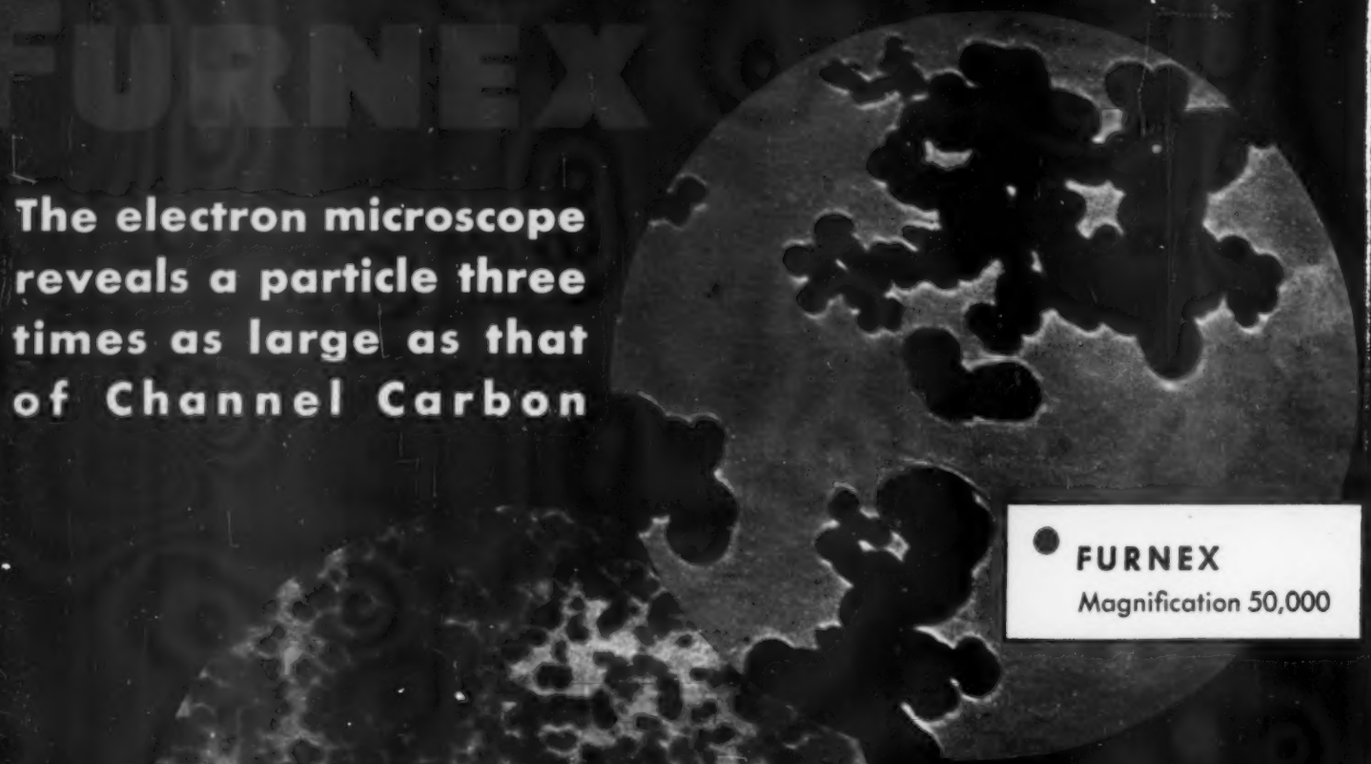

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Cementing Rubber Mountings

A German process for cementing rubber mountings onto steel machinery parts to eliminate vibration is described in a report released recently by the Department of Commerce. Under the trade name of "Schwingmetall," this process was used extensively during the war in German submarines to eliminate sounds which might betray the location of the vessel. Two methods of bonding the rubber mountings onto steel machinery parts are described in the report: (1) Direct application of the cement to the degreased and sandblasted steel, employed for pieces to be used in compression, and (2) Brass plating of the steel, followed by application of the cement, employed for mountings subjected to shear or torque. For the plating method, the brass coating must be uniform and the surface completely free from moisture. The cement is applied immediately after plating to avoid the possibility of surface oxidation which might weaken the bond. Copies of the report (PB-22807) maye be obtained from the Office of Technical Services, Department of Commerce, Washington 25, D. C., for $4 in photostat form and 50c in microfilm form.

Bomber Uses Giant Tires

Giant 110-inch tires, manufactured by the Goodyear Tire & Rubber Co., Akron, are being used on the Army Air Forces' newest super-bomber, the XB-36. The tires are 44 inches across the beads and 36 inches from one sidewall to the other. More than 735 pounds of rubber, 420 pounds of fabric and approximately 35,000 feet of bead wire went into the 34-ply tire. Each unit, comprising tire, tube and wheels and brakes, weighs 4,000 pounds.

Seeks Agency in Holland

Curt Seyfried, Amstel 169, Amsterdam, Holland, wishes to contact American manufacturers of rubber articles, such as jar rings, belting, hose, soles and heels, and drug sundries, who are interested in establishing a sales agency in Holland. The company has acted as a sales agency for European rubber manufacturers for thirty years.

Allocations of Acetone

Chemical allocation records of the War Production Board, as compiled by the U. S. Bureau of the Census, indicate that for the period January 1, 1944, to June 30, 1945, a total of 16,566,000 pounds of acetone was allocated to rubber manufacture, or 2.6% of total allocations in that period. Of this amount, 5,907,000 pounds were allocated in the first half of 1944; 5,481,000 pounds in the second half, and 5,178,000 pounds in the first half of 1945. For the same 18-month period, 70,996,000 pounds were allocated to coated fabrics and rayons, representing 11.2% of total allocations.

Soviet Industry to Expand

The Soviet Union plans to double the output of its rubber industry by 1950 as part of its fourth Five-Year Plan, according to a recent report in the *Foreign Commerce Weekly*. Production of synthetic rubber made of raw materials other than foodstuffs is to be increased to 38 per cent of the total, and large scale production of natural rubber is to be launched. The production of tires, rubber footwear, and conveyor and transmission belts is also to be increased. Tire factories scheduled to be built by 1950 in the Ukraine, Western Siberia, the Far East and elsewhere are planned to have twice the present productivity per worker. Research on synthetic rubber is to be expanded, and pilot plants set up. The rubber-producing koksaghyz plant is stated to give Russia great opportunities to expand natural rubber production.

Belgian Agency Requested

Societe Pour L'Importation et la Manufacture D'Articles en Caoutchouc, 28 Rue des Fabriques, Verviers, Belgium, is interested in contacting American manufacturers of such rubber products as sporting goods, toys, drug sundries, surgical goods, etc., for representation in Belgium.

Organizes New Division

B. F. Goodrich Co., Akron, has organized a new Shoe Products Sales Division to merchandise all products the company produces that are used in the manufacture or repair of shoes. With the move, the company also announced a new "Silvertown" branded replacement rubber heel to be offered along with the extensive Hood line of shoe repair products, including leather and findings, that will be marketed through this new division. Previous to the new merchandising plan, the company had concentrated its sales efforts primarily on rubber and plastic soles and heels to manufacturers of shoes. These products will be augmented by a line of new upper materials, midsoling, adhesives, and miscellaneous products used by shoe manufacturers. Fred A. Lang, who has been associated with Goodrich since 1926, most recently as merchandise manager of the industrial products sales division, has been appointed general manager of this new division.

Trethaway Introduces Moldaloy

Trethaway Associates, 37 Wall St., New York 5, N. Y., has introduced a new alloy with wide possibilities as a material for the production of molds for use in casting rubber, plastics and other materials. Called Moldaloy, the material is said to melt at 430° F., to have a hardness of 22 Brinell, a compression strength of 8,000 p.s.i., and a shrinkage of approximately 0.001-inch per inch. The alloy is recommended by the manufacturer as a low cost material for making molds for casting rubber, plastics, plaster and wax, for forming models for engraving and duplicating machines, dies for post forming plastics, and as a coating for wood and plaster patterns.

Foreign Sales Agency Sought

A. Vieira & Ca., Funchal, Madeira Islands, is interested in hearing from American tire and tube manufacturers who wish to establish a sales agency in the Madeira Islands. Before the war, the company served as a sales agency for Cord and Auburn automobiles in the Islands.

Financial Data on the Rubber Manufacturing Industry: 1929-45

(In Millions of Dollars)

(As compiled by the U. S. Department of Commerce)

	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
Corporate Profits Before Taxes	$ 17	$—51	$—20	$—34	$ 7	$ 5	$ 22	$ 46	$ 29	$ 19	$ 62	$ 63	$ 156	$ 141	$ 332	$ 319	$ 317
Federal and State Taxes	7	2	2	0	2	2	5	10	7	6	13	19	72	82	245	229	228
Corporate Profits After Taxes	10	—53	—22	—34	5	3	17	36	22	13	49	44	84	59	87	90	89
Net Dividend Payments	29	26	20	13	6	—1	7	31	26	11	21	14	24	17	23	25	26
Corporate Savings	—19	—79	—42	—47	—1	4	10	5	—4	2	28	30	60	42	64	65	63
Dividends Received	16	16	7	6	1	20	8	7	15	7	10	13	12	9	12	13	14
Corporate Sales	1,355	1,042	771	595	665	682	730	903	1,039	852	1,069	1,153	1,689	1,876	2,960	3,294	3,334

FINANCIAL NEWS

GOODYEAR TIRE & RUBBER CO. REPORTS NET OF $15,088,189

Goodyear Tire & Rubber Co. has reported that for the first half of 1946 net sales set a peacetime record and net income was the largest in its history. Net income, after providing a $4,000,000 reserve for foreign investments, amounted to $15,088,189, which is equal to $6.59 a share of common stock, and which compares with $7,509,868, or $2.90 a common share, for the first six months of last year when $2,500,000 was reserved for property adjustments and contingencies.

Consolidated net sales for the half-year were $282,736,171, as compared with $407,991,835 for the corresponding period a year ago when wartime business was near its peak, and with $152,931,046 in the previous peacetime record first half of 1941.

A statement accompanying the report points out that the company's twenty-four rubber manufacturing plants are now entirely reconverted to peacetime operations, and during this half-year have steadily approached maximum production, although demand still continues to exceed productive capacities. Regarding the decision of the board of directors to provide a reserve of $4,000,000, the report indicates that in view of increasing regulations abroad which may have adverse effect on the company's foreign investments, it was deemed advisable to establish this reserve.

The consolidated balance sheet of the company and its subsidiaries throughout the world as of June 30, 1946, shows current assets of $197,715,223 and current liabilities of $39,776,546, as compared with $190,417,353 and $37,945,338, respectively at December 31, 1945. Inventories at the end of the first half of this year amounted to $101,849,446, as compared with $83,115,125 at the end of the previous year.

During the half year, earned surplus increased from $68,009,880 to $79,005,235 and net property account, after depreciation and amortization, from $70,049,072 to $78,701,231. Giving effect to the $4,000,000 reserve for foreign investments, contingent and miscellaneous reserves now stand at $23,070,310.

Working capital of the company now amounts to $158,000,000 and the ratio of current assets to current liabilities is approximately 5 to 1. During July the balance of cash advanced by the government for war production contracts was repaid.

Faultless Rubber Co.

Year Ending June 30: Net income of $282,000, as compared with $116,392 for the previous fiscal year.

Intercontinental Rubber Co.

First Half: Net income of $90,304, after deducting $41,897 for taxes, which compares with $372,482, after deducting $191,949 for taxes, for the first half of the previous year. According to a statement accompanying the report, the company produced 4,430,600 pounds of resinous guayule rubber and 278,300 pounds of deresinated guayule rubber, while 16,232 metric tons were shrub milled during the first half of 1946. During the spring of this year, 2,600 acres were planted, bringing the total under cultivation by the company to nearly 6,500 acres. The consolidated balance sheet, as of June 30, 1946, indicates total current assets of $2,141,916, including $552,856 in cash, $1,200,007 in U. S. Treasury bonds, and $351,786 in inventories. Total current liabilities are reported as $305,060, including $183,537 in accounts payable and $74,524 as a reserve for U. S. income taxes. The report covers the parent company and its subsidiaries.

Monsanto Chemical Co.

Six Months: Net income of $6,185,234, after deducting $4,015,617 for taxes, which is equal to $4.45 a share of common stock, and which compares with $3,051,895, or $1.95 a common share, for the first half of 1945 when $7,957,811 was deducted for taxes. Sales for the second quarter amounted to $25,620,043.

Belden Manufacturing Co.

First Half: Net income of $288,038, which is equal to $1.09 each on 265,300 shares, and which compares with $231,267, or 96c each on 241,547 shares, for the corresponding period of 1945. Net sales amounted to $5,472,125, against $5,867,352 for the first half of the previous year.

Armstrong Cork Co.

First Half: Net income of $1,987,617, which is equal to $1.19 a share, and which compares with $1,884,671, or $1.22 a share, for the same period of 1945. The company reported that net income for the first half of this year was improved by an estimated refund of $225,000 in Federal taxes.

Garlock Packing Company

First Half: Net income of $279,848, which is equal to 67c a share on 418,500 shares, after giving effect to two-for-one stock split in April, and which compares with $463,423, or $1.11 a share, for the corresponding period of the previous year.

B. F. GOODRICH CO. REPORTS NET INCOME OF $12,470,390

B. F. Goodrich Co. has reported a net income for the first half of 1946 of $12,470,390, after provision of $3,000,000 for taxes and a $3,000,000 contingency reserve, which is equal to $8.74 a common share, and which compares with $5,621,544, or $3.52 a common share, for the first six months of 1945 when $32,099,000 was provided for taxes and $1,500,000 for contingencies.

Consolidated net sales for the half year were $163,857,141, as compared with $222,530,675 for the corresponding period of 1945, a decrease of 26.4%. Value of production from government-owned plants operated by Goodrich was not included in sales for either period.

The consolidated balance sheet as of June 30, 1946, shows current assets of $138,723,712 and current liabilities of $28,701,747, a ratio of 4.83 to 1. According to the statement, inventories at June 30 amounted to $68,072,264, as compared with $55,501,167 on June 30 of the previous year. Materials on hand and the material content of finished and unfinished goods were valued at the lower of cost or market prices.

Thermoid Company

Half Year: Net income of $205,234, which is equal to 23c a share on 602,464 common shares, and which compares with $501,048, or 74c each on 600,000 shares, for the first six months of 1945. The net income is said to reflect a loss in the plant of the recently liquidated Joseph Stokes Rubber Co. in Trenton, N. J., and a loss in Los Angeles and Canadian operations amounting to $200,766. The operating account does not include a profit from capital gain realized in the sale of the Los Angeles and Stokes plants amounting to approximately $800,000 which is of a non-recurring nature.

General Tire & Rubber Co.

First Half: Net income of $3,237,831, after all charges including a provision of $1,000,000 for contingencies and $3,051,000 for taxes, which is equal to $5.19 a share of common stock, and which compares with $1,211,801, or $1.77 a share, for the corresponding period of the previous year, when $3,300,000 was provided for taxes.

Raybestos-Manhattan, Inc.

First Half: Net income of $649,736, which is equal to $1.03 a share, and which compares with $666,422, or $1.06 a share, for the corresponding period of the previous year.

Pantasote Company

First Half: Net income of $282,978, which is equal to 74c a share, and which compares with $128,250, or 34c a share, for the first six months of 1945.

TECHNICAL REPORTS AVAILABLE FROM THE DEPARTMENT OF COMMERCE

Listed below is information on additional reports on industrial and technical developments which occurred throughout the world during the war-time period. This information is taken from the "Bibliography of Scientific and Industrial Reports" issued by the U. S. Department of Commerce, and copies of the reports listed may be secured, at the prices indicated, from the Office of Technical Services, Department of Commerce, Washington 25, D. C. Remittances made payable to the Treasurer of the United States must accompany orders. Titles of the more recent reports follow:

Bogie Wheel, Rubber, Shear Cushion, Resilient Type. By C. W. Kynoch and others. Results of tests on the shear cushion resilient type rubber bogie wheel as tank equipment.—Report No. PB 3082. 14 pp. Photostat, $1; Microfilm, 50c.

Second Report on 7.50 x 20 S-4 Synthetic Tires, Test A-346 and 32nd Report on Ordnance Program No. 5737. By E. J. Murray.—Report No. PB 3077. 52 pp. Photostat, $4; Microfilm, 50c.

Protective Clothing, Inner Boots and Rubber Gloves (Rubber Impermeable Clothing—Presumably French). By Donald E. Hudgin and Hugo E. Vivadelli. Test results on heavy protective rubber jackets and trousers, light inner boots and heavy rubber gloves.—Report No. PB 7218. 9 pp. Photostat, $1; Microfilm, 50c.

French Heavy Rubberized Anti-Gas Suit. By Shirley W. Randa. A two-piece suit consisting of overalls and a jacket with attached hood is described.—Report No. PB 7218. 8 pp. Photostat, $1; Microfilm, 50c.

German Apron, Protective Rubber. By Donald E. Hudgin and Hugo E. Vivadelli. Results of vesicant penetration tests are given as well as a full description of the apron.—Report No. PB 11301. 5 pp. Photostat, $1; Microfilm, 50c.

Comments on German Rubberized Pants and Boots, Treated Sheets and Rubberized Gas Mask Container. By W. J. Matteson.—Report No. PB 8718. 3 pp. Photostat, $1; Microfilm, 50c.

German Heavy Rubber Mittens. By Shirley W. Randa. The mittens are described as suitable protection against blister gases.—Report No. PB 4506. 5 pp. Photostat, $1; Microfilm, 50c.

The Reppe Butadiene Process: Summary Report. By C. C. Monrad.—Report No. PB 9693 (similar to Report No. PB 4604). 24 pp. Photostat, $2; Microfilm, 50c.

Interrelations of Sol and Gel in GR-S Polymers. By W. O. Baker, R. W. Walker and N. R. Pape. Issued by the Office of the Rubber Director.—Report No. PB 9687. 41 pp. Photostat, $3; Microfilm, 50c.

Measurement of Viscosity of GR-S Solutions. By W. O. Baker and J. W. Mullen. Issued by the Office of the Rubber Director.—Report No. PB 9685. 23 pp. Photostat, $2; Microfilm, 50c.

47-Inch Smooth Contour Casings on B-26 Airplanes. By U. S. Army Air Forces. This incomplete report is concerned with the failure of B-26 tires.—Report No. PB 7373. 1 p. Photostat, $1; Microfilm, 50c.

Instructions for the Determination of Gel Content, Swelling Volume of Gel and Intrinsic Viscosity of Gel in GR-S. By War Production Board and Office of the Rubber Director.—Report No. PB 9682. 10 pp. Photostat, $1; Microfilm, 50c.

Infrared Spectra and Structure of Synthetic Rubbers. By J. V. White and P. J. Flory. This report discusses the infrared spectra of a number of synthetic rubbers which were investigated by the Standard Oil Development Co. for the two-fold purpose of obtaining information regarding fundamental polymer structure and of establishing methods of identification and analysis of natural and synthetic rubber mixtures.—Report No. PB 9681. 22 pp. Photostat, $2; Microfilm, 50c.

Dutch Gas Mask. By Paul Gilmont. A general description is presented, and a comparison is given between the Dutch mask and the U. S. combat service mask.—Report No. PB 10425. 30 pp. Photostat, $2; Microfilm, 50c.

Abstracts of Technical Data in the Field of Synthetic Rubber Seized by the Alien Property Custodian. By Frederick W. Breuer.—Report No. PB 9675. 30 pp. Photostat, $2; Microfilm, 50c.

Review of the German Patent Literature Relating to Synthetic Rubber. By Frederick W. Breuer.—Report No. PB 9676. 39 pp. Photostat, $3; Microfilm, 50c.

I. G. Farbenindustrie, Ludwigshafen, Synthetic Materials. By British Intelligence Objectives Sub-Committee. A resume is given of the information gained by an inspection of this plant.—Report No. PB 9545. 1 p. Photostat, $1; Microfilm, 50c.

Organization of Polymerization Information. By R. F. Dunbrook and P. S. Greer. This report is a composite of four different reports on visits made by American investigators under the sponsorship of the Rubber Subcommittee of the Technical Industrial Intelligence Committee to the leading synthetic rubber plants in Germany: Schkopau, Leverkusen, Ludwigshafen and Huls. It gives a summary of German research and development and polymerization techniques.—Report No. PB 13342. 58 pp. Photostat, $4; Microfilm, $1.

Reports of Visits to Synthetic Rubber Plants in Germany, May 3 and 4, 1945. By Sidney D. Kirkpatrick. A description of production at the plants in Leverkusen, Huls, and Worms-Rheins, as well as the plant of Dynamit, A. G., is given. Data was gathered by G-4 Division of the Allied Expeditionary Force.—Report No. PB 8276. 3 pp. Photostat, $1; Microfilm, 50c.

Performance of Non-Skid Tires, U. S. Rubber Co., S. C. 10-Ply Nylon Tire. By Lewis V. Coursen. The performance of forty-eight 10-ply nylon tires on B-26 aircraft is described. A load deflection curve is appended.—Report No. PB 9789. 3 pp. Photostat, $1; Microfilm, 50c.

Performance of S-5 Synthetic Rayon Aircraft Tires. By Lewis V. Coursen. The construction details of the tires tested and the performance data are given.—Report No. PB 10105. 37 pp. Photostat, $3; Microfilm, 50c.

Performance of Synthetic Rubber Tires (30" S. C. Buna S Tread with Reclaim and Natural Rubber Carcass). By Lewis V. Coursen. The object of the work covered by this report was to study the performance and life expectancy of synthetic rubber aircraft casings.—Report No. PB 10100. 12 pp. Photostat, $1; Microfilm, 50c.

Proposed Synthetic Aircraft Tire Tests Nos. 4, 5, 6 and 7. By Lewis V. Coursen. Tests conducted by the U. S. Army and Navy are described.—Report No. PB 10106. 12 pp. Photostat, $1; Microfilm, 50c.

Proposed Testing Program for Synthetic Tire Tests Nos. 3A, 3B and 3C. By Lewis V. Coursen. The purpose of this report is to record the plans for testing synthetic fighter style aircraft tires.—Report No. PB 10103. 2 pp. Photostat, $1; Microfilm, 50c.

Service Test Program for Synthetic Aircraft Tires. By Lewis V. Coursen. The purpose of this report is to record the program for testing synthetic aircraft tires.—Report No. PB 10102. 7 pp. Photostat, $1; Microfilm, 50c.

Snow and Ice Tire Performances. By Lewis V. Coursen. This report discusses the performance of the snow and ice tires manufactured by the U. S. Rubber Co.—Report No. PB 9788. 4 pp. Photostat, $1; Microfilm, 50c.

Unsatisfactory Tire Performance at Langley Field. By Lewis V. Coursen. A description is given on the use of 10-ply cotton tires for B-26 aircraft.—Report No. PB 9787. 2 pp. Photostat, $1; Microfilm, 50c.

Measurement of Refractive Index and Determination of the Styrene Content of GR-S Copolymers. By Irving Madorsky and Lawrence A. Wood. This technical report is from the National Bureau of Standards.—Report No. PB 9692. 6 pp. Photostat, $1; Microfilm, 50c.

The Properties of the Latest Synthetic Rubbers. By P. J. Mahoney and C. E. Jaynes. Test results to determine the properties of the latest butadiene copolymer type synthetics are tabulated in 13 tables in this report.—Report No. PB 9809. 17 pp. Photostat, $2; Microfilm, 50c.

Molecular Weight Distribution from Turbidity Measurements. By P. P. Debye. A highly theoretical consideration as to the relationship between molecular weight distribution and turbidity (fractional loss of intensity per cm.) is summarized.—Report No. PB 9688. 15 pp. Photostat, $1; Microfilm, 50c.

CANADIAN NEWS

Two firms in Wiltshire, England, the Avon India Rubber Co., Melksham, and the West Country Creamery, Ltd., Warminster, have agreed to help each other solve their production problems, according to a recent report in the *London Daily Mail*. At Melksham, a shortage of labor was holding up production of rubber sports equipment for export, while at Warminster there were periods when the creamery was closed or on part time. Under the agreement, when there is insufficient milk for cheese-making, the creamery workers will make football bladders in their own factory for the Melksham firm. The arrangement will mean full time work all year round for the Warminster concern, and the Avon firm will be able to fill its customers' orders.

Midtown Motors, Ltd., Waterloo, Ont., recently received a truck with wooden blocks encircling the rims to serve the purpose of tires. When the machine was delivered, the tires on the rear wheels were removed and returned to the motor plant. They were merely placed on the rear wheels so as to drive the truck up the platform onto the motor transport. O. E. Fries, manager of Midtown Motors, said that unless the situation improves, the customer will have to provide his own tires when purchasing a truck. Until recently, six-wheel trucks were being delivered with four tires, the purchaser having to obtain the others elsewhere, if possible.

The first shipment of natural rubber to reach Canada from the Malaya States since 1940 arrived at Halifax, Nova Scotia, on August 13. The rubber has been consigned to the government-owned Polymer Corp. at Sarnia, Ont.

Commenting on a statement made recently in London, England, by F. D. Ascoli, chairman of the Rubber Growers Association, a spokesman for the Polymer Corp. said on August 13 that any move on the part of Great Britain to stop the importation of synthetic rubber in favor of natural rubber would have no effect on the synthetic rubber industry in Canada. The spokesman added that Britain's decision to return to the use of natural rubber instead of the synthetic material was an economic decision and has no bearing on the merits of natural and synthetic rubber.

Dr. James S. Tapp, associated with the National Research Council since 1937, was recently appointed assistant research director of the Polymer Corporation. Born in Hensall, Ontario, in 1908, Dr. Tapp received his B.A. in chemistry from the University of Western Ontario, and his M.A. from McGill University. He also received a Ph.D. from McGill in 1933, and a similar degree in 1936 from the University of London. During the war he was concerned with development work on armaments.

Construction has started at Lachine, Quebec, of the first unit of a plant which will eventually quarter the wire and cable division of the Northern Electric Co., Ltd. The division is located in Montreal at present. Plans call for completion of the plant by the summer of 1947, although the installation of machinery and moving of departments from Montreal is not expected to be achieved until early in 1948.

Controls Tigron Latex Corp.

Eugene J. O'Neil, president of the Tigron Latex Corporation, Fall River, Mass., has purchased all of the stock of that company and is now president and treasurer. Albert G. Pierce is secretary and H. J. Bream is assistant treasurer. The company continues to occupy the same plant as before, employs 25 people, and is manufacturing a full line of latex compounds and adhesives. It is also manufacturing rubber duck decoys and latex parachute rubbers. The thread equipment and thread business of the company has been sold to the Pilgrim Latex Thread Co., headed by H. W. Greenup, formerly treasurer of the Tigron Latex Corp.

Offers Consulting Service

C. E. Schermerhorn, rubber engineer with a background of some twenty-two years of practical experience, is currently offering a technical consulting service to the rubber, plastics and resin industries. Mr. Schermerhorn is primarily engaged in consulting work on mechanical rubber goods, including sponge rubber, but his past experience as a rubber engineer included work on cements, cork products, tank and pipe linings, etc. Mr. Schermerhorn presently makes his headquarters at 32 Third Ave., East, Newark, N. J., but intends returning to the middle or far west in the near future where he was located for many years.

Peters Bros. Move Offices

Peters Bros. Rubber Co., Inc., has moved its factory and offices to Norman Ave. and Dobbin St., Brooklyn 22, N. Y. The new telephone number is EVergreen 9-6695. George L. Peters is president and treasurer of the company.

Truck to Test Large Tires

A dynamometer truck designed to test the range of large tires and wheel equipment used in the off-the-road field has been completed by the Goodyear Tire & Rubber Co., Akron. The test truck, which is similar in design to a smaller dynamometer truck used by Goodyear in the testing of agricultural type tires and tractors, will be made available to the various equipment manufacturers for testing large tires and their equipment. Information from these tests will be the exclusive use of the manufacturer for whom the tests are made. The new test vehicle has been designed to measure pulls imposed upon it due either to tractive effort or rolling resistance. It may be used to determine the effect of tire size, load, inflation, deflection, and speed on traction and rolling resistance.

Fiberglas Cloths for Coating

Four new Fiberglas cloths, designed specifically for use as a base for coated fabrics, have been developed by the Owens-Corning Fiberglas Corp., Toledo, Ohio. Identified as 119-A, 126-A, 138-A, and 190, the new cloths are woven of continuous filament Fiberglas yarns, ranging in thickness from .004 to .007 inch. The cloths are reported suitable for coating by the knife method with synthetic rubbers or high solids vinyl resin compounds. According to the company, the outstanding property of the cloths is their retention of tensile strength under moist conditions. Suggested uses of the coated Fiberglas cloths are as coverings for outdoor furniture, awnings, canopies, tarpaulins, aprons, shower curtains and industrial cloths.

Form Autoclave Engineers, Inc.

Autoclave Engineers, Inc., with headquarters at 3737 Cortland St., Chicago 47, Ill., has been formed by the Precision Scientific Co., of Chicago, and Autoclave Engineers, of Titusville, Penna., for the design, manufacture and distribution of laboratory and pilot plant high pressure equipment. The new company will make available a complete line of high pressure valves, fittings, pumps, autoclaves, and reactors, with working pressures up to 25,000 pounds and working temperatures up to 1,000° F. They will be made of stainless steel and other materials. Fred Gasche, formerly associated with such prominent firms as Struthers-Wells and Autoclave Engineers, is active head of the new company.

To Produce Dipped Goods

Bayshore Industries, Inc., is the name of a new company established at Elkton, Md., for the production of dipped goods from synthetic latex. Eugene S. Salinger is president and treasurer of the company, while A. L. Gursha is vice-president and secretary.

LOS ANGELES NEWS

The Los Angeles Rubber Group abandoned all serious meetings for the summer and concentrated on the business of entertaining its members. Two outings were held, the first on August 10th at the Don Lugo Club in Chino, Calif., and the second on August 16th at San Diego.

The Chino outing was attended by some eighty-odd members and their guests. The afternoon for the most part was spent in contests and games of chance. Among the lucky ones were: Mr. C. M. Reinke, of Reinke and Amende, who won the first prize in the golf tournament. Mr. Reinke won a wood bar set. Second prize in the golf tourney went to Mr. A. L. Pickard, of the Braun Corp., who won a woolen sweater as his award. In the Blind Bogey round, Glen Goes walked off with top honors, winning a domino set.

In the tennis matches, Dick Bell and Al Frederick won two sets. There were also prizes for horseshoe pitching, dart throwing, badminton and ping pong tournaments.

Highlighting the afternoon's festivities was an age guessing game, in which the contestants had to give an approximate total of the entire group's age. Winning a Philco radio for his estimate was Bob Short, of Kirkhill Rubber Co. Mr. R. D. Zirker, of Shell Union Oil Corp., was second best and received a $25 Saving Bond as his prize.

After the contests, an elaborate steak dinner was served and then the evening was topped off by a round of poker.

The outing at San Diego, which incidentally was a week-end fishing trip, was attended by more than 70 members. The week-end started late Friday night in San Diego with a steak dinner and some tall fishing stories. Then the fishermen boarded the New Kingfisher at 1 a.m. off Canada Isle.

W. D. Good and L. L. Schafer, of American Rubber, brought as their guests, Charles Grainger and William Reed, of the Melbourne, Australia, Olympic Tire Co.

Fifty dollars in cash was paid to Mr. J. Knudseo, of Kirkill Rubber, for catching the largest fish of the trip. His "Yellow Tail" tipped the scales at 221 pounds.

Howard Chamberlain, Executive Vice-President of Kirkill Rubber Co., Los Angeles, fills the position formerly held by L. W. Winship, one of the original founders of the company. Mr. Winship retires after 25 years of service to the rubber industry.

"Rubber will be more plentiful in the not-to-distant future," claims Mr. V. S. "Andy" Anderson, president of the Pacific Moulded Products Co., Los Angeles. Mr. Anderson, on a recent eastern trip, made a survey of the present rubber crisis throughout the country and he is optimistic in his predictions. The Pacific Moulded Products Co. supplies the great southwest, as well as the midwestern states, with hundreds of household and business rubber items.

The "closed shop" notice on the doors of B. F. Goodrich's Los Angeles plant recently, had nothing to do with labor difficulties. The plant was shut down from midnight August 24th to 6 p.m. September 3rd for much needed maintenance work and to give all eligible employees a vacation.

Goodyear Tire and Rubber Company will sponsor the Los Angeles Rubber Group's first meeting of the new fall season at the Mayflower Hotel in Los Angeles on October 1st. Phil Drew, of Goodyear, will act as chairman of the meeting.

Mark Morris, of Los Angeles, announces the opening of his new rubber products manufacturing company, the Ma-re Foam, Inc. The firm listed 2500 shares as its initial capital issue, with shares selling at $10 each.

Raymond B. Stringfield has been made president of the Fullerton Manufacturing Co. and is heading new management which is rebuilding the plant in Fullerton, Calif., that was partially destroyed by fire last Spring. Production of c field specialties and molded rubber pr. ucts will be resumed about October 1st.

Mr. Stringfield is well known in the rubber industry, having served as manager of service laboratories at Akron and as chief chemist at Los Angeles for the Goodyear Tire and Rubber Co. from 1920 to 1928, and since that time as consulting chemical engineer on rubber and plastics problems for many western industries. He is a graduate of the University of Southern California and of the Massachusetts Institute of Technology, was organizer and first chairman of the Los Angeles Rubber Group, is a past chairman of the Southern California Sections of both the American Chemical Society and the American Institute of Chemical Engineers, and is at present chairman of the Southern California District Committee of the American Society for Testing Materials.

Robert A. Lees has been named manager of the American Anode, Inc., plant being constructed in Los Angeles and expected to be in operation late this fall. The plant, which will manufacture latex compounds and mixes for all purposes, will be the only one of its kind in the Pacific Coast area.

Mr. Lees received his A.B. and master's degrees in chemistry from Oberlin College, and during his graduate study was an assistant in the chemistry department of the school. He joined American Anode as a chemist in 1929, and for six years worked on research and development problems. He has been production manager since 1935 and is acknowledged one of the authorities in latex compounding and use, recently serving as consultant to the Rubber Bureau of the Civilian Production Administration on these matters.

Carl E. Johnson, president of Sterling Electric Motors, Inc., has announced a sizable betterment and improvement program for their manufacturing facilities. This pioneer Los Angeles electric motor manufacturer, recognized as one of the country's leaders in the design and production of variable speed and geared motors, is currently expending some $600,000 in modernization and new buildings.

To their present three-acre plant will be added a 22,000 square foot unit. Manufacturing processes throughout the entire plant will be re-equipped with the latest modern high-speed production machinery, conveyor belts, manifold casting machines, bake ovens, etc.

Moves Office to Chicago

Eric Bonwitt, dealer in used machinery for the rubber industry, has moved his headquarters from Akron to 431 South Dearborn Street, Chicago 4, Ill. The new telephone number is WEBster 3548.

Raymond B. Stringfield

who has been named president of the Fullerton Manufacturing Co.

OBITUARIES

Dr. Hugo Fuchs

Dr. Hugo Fuchs, former general manager of the Austro-American (Semperit) Rubber Works of Vienna, Austria, who had lived in the United States since 1941, died at his home, 15 East 86th Street, New York City, on September 8, at the age of 63. He had been seriously ill for the past six months, never fully recovering from a pneumonia attack. Born in Prague, in 1883, Dr. Fuchs spent his entire lifetime in the rubber manufacturing industry, and was credited with several notable advances in the production of latex products, particularly toys. Since his arrival in the United States, he acted as consultant to various rubber manufacturing concerns, including the Seamless Rubber Co. of New Haven, Conn. During the war his extensive knowledge of European rubber manufacturing processes and of the industry itself in that area was of assistance to several government agencies, including the Office of War Information. Dr. Fuchs leaves a widow and a brother, now in Shanghai.

Robert C. Wilkin

Robert C. Wilkin, sales manager of the insulated wire division of the Phelps Dodge Copper Products Corp., died at his estate in Old Westbury, L. I., N. Y., on August 31, shortly after being pulled from nine feet of water in his swimming pool, where he had been using an under-water diving outfit equipped with a mask, oxygen tank and other appliances. He was 36 years old. Mr. Wilkin was graduated in 1932 from Dartmouth College, where he was president of the student body and fullback on the varsity teams of 1930 and 1931. Until a year and a half ago, he made his headquarters in Los Angeles, Calif., as manager of the Pacific Coast branch of the Phelps Dodge Copper Products Corp. His clubs included the Racquet and Tennis, Piping Rock, Dartmouth and India House of New York, the Pacific Union of San Francisco and the California of Los Angeles. A widow, son and two daughters survive.

Philip H. W. Smith

Philip Henry Waddell Smith, retired vice-president of the General Cable Corp., died at his home in Princeton, N. J., on August 31, after a brief illness, at the age of 77. Mr. Smith was graduated from Lehigh University in 1892. Before joining General Cable, Mr. Smith was associated with the Standard Underground Cable Co. He retired from General Cable in 1930. A member of several historical and genealogical societies, he belonged to the Society of Colonial Wars of New Jersey, the St. Nicholas Society of New York, the Order of Runnemede and the Princeton Chapter of the Old Guard. A widow, two sons and daughter survive.

Develops New Pigment Color

A new pigment color, which is said to provide new shades of brown for industrial enamels and trim paints, has been developed by E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del. Known as "Auric Brown," the new pigment, which is chemically hydrated ferric oxide and is characterized by an extremely small particle size, is reported to promise outstanding resistance to light for a wide range of products. The company expects this brown pigment to find use in emulsion paints, showcard colors, and possibly plastics. Its application in the rubber and linoleum industries remains to be investigated.

Council Moves Headquarters

The National Farm Chemurgic Council has moved its national headquarters to 1368 North High St., Columbus 1, Ohio. The new offices are located a short distance from the Battelle Memorial Institute and Ohio State University. The mailing address is National Farm Chemurgic Council, Station, A, P. O. Box 397, Columbus 1, Ohio.

Prepare New Safety Manual

The findings of a special committee organized by the Office of Rubber Reserve, Reconstruction Finance Corporation, to conduct an extensive study of the safety aspects of synthetic rubber plant laboratory operations, have been summarized in a booklet entitled "Safety Manual for Operation of Copolymer Plant Laboratories, Edition 1." Approximately half of the text of the manual is devoted to the safe handling of flammable or explosive hydrocarbon mixtures. The equipment design and arrangement recommended in the manual have been adopted for standard use by all copolymer laboratories.

To Produce Rubber Thread

Harold W. Greenup, formerly treasurer of the Tigron Latex Corp., Fall River, Mass., has established the Pilgrim Latex Thread Co. for the manufacture of rubber thread. Pilgrim Latex purchased the thread equipment and thread business from Tigron and is operating at present from space which it rents at the Tigron plant.

To Produce New Premium Tire

An automobile tire which utilizes a new principle of increased air capacity at lower air pressure will be produced by the U. S. Rubber Co. as its first post-war premium tire. Known as the "U. S. Royal Air Ride," it will be marketed as a premium tire when government price regulations permit its release. By combining 14% more air and 8% less air volume pressure, the new tire is said to enhance greatly the cushioning effect an automobile receives from its tires. Additional features include a flatter tread and sharply defined shoulders. A perforated brake-action has been introduced. When the car's brakes are applied, these perforations open up, helping to bring the vehicle to a safe stop. The tire will be of rayon construction in all sizes authorized by the Government. It will be characterized by different size markings, such as 65-16 instead of 6.50x16.

Offers New Graduate Course

The Department of Chemical Engineering of the Polytechnic Institute of Brooklyn, Brooklyn, N. Y., will offer a new graduate lecture course on Oil, Resin and Varnish Technology for the fall and spring terms. The course, which will consist of fifteen lectures in each semester, will cover such subjects as methods of manufacture, physical and chemical characteristics, special processing and special applications. It will also cover plasticizing resins, solvents, cellulose derivatives, vinyl, acrylic and other high polymer resins, alkyd resins, amino resins, and rubber resins.

Spence First Goodyear Lecturer

Dr. David Spence, of Pacific Grove, California, well-known rubber technologist, was the first Charles Goodyear Lecturer officially named by the Division of Rubber Chemistry, A.C.S. The selection of Dr. Spence was made in 1941, but due to illness Dr. Spence was not able to present his lecture at the Fall Meeting of the Division in 1941. Subsequent lecturers included Dr. L. B. Sebrell, of Goodyear, and Dr. Waldo L. Semon, of Goodrich. Ira Williams, of J. M. Huber, Inc., was selected as the 1946 Lecturer.

Diamond Builds Alkali Plant

Diamond Alkali Co. has anounced that construction has started on the company's new industrial chemical plant in Houston, Texas. It is expected that production of chlorine and caustic soda will begin upon completion of the plant sometime in 1948. The company's investment in the plant will be approximately $6,000,000 and initial production will require about 200 workers. The chlorine-alkali operation will employ sodium chloride as the principal raw material.

NEW RUBBER GOODS

Self-Sealing Weatherstrip

A new type of self-sealing weatherstrip, which is said to eliminate the need for expensive channels and mouldings,

thus reducing assembly labor costs and simplifying body construction, is now being manufactured by the Inland Manufacturing Division of General Motors Corporation, Dayton 1, Ohio. Abetted by a simple tool, the new strip material weatherproofs windows and windshields of motor vehicles or airplanes, in three easy operations. These operations are: (1) Setting the strip on the body panels; (2) Fitting the glass into place in the strip with a simple tool; and (3) Threading with zipper-like motion of the filler into the channel provided in the strip with another simple tool (seen in the accompanying illustration).

Goodyear Inflatable Boat

A new type inflatable boat, constructed of synthetic rubber-coated nylon fabric, has been introduced by the Goodyear Tire & Rubber Co., Akron. The hull of the

boat consists of two entirely separate air chambers with the upper chamber offset to provide greater internal space. According to the company, the boat is 40 per cent lighter and many times stronger than any previous boat of comparable size. It has air-inflated seats that are said to seat three persons comfortably and with ample room for four. The lightweight standard unit includes boat, sectional floating oars, hand pump, repair kit and carrying case.

Sunruco Arrow Athletic Balls

A complete line of rubber-covered athletic balls, known as the Sunruco Arrow line, has been placed on the market by the Sun Rubber Co., Barberton, Ohio. These balls, having no stitches and no lace, are produced by the "Sunruco Vita-Weld Construction" method, which is similar in principle to the construction of a tire, and incorporates the following four major parts, as indicated in the photo: (a) A molded rubber bladder compounded for long air retaining ability, much like an inner tube; (b) Rubber-impregnated square-woven fabric plies, built up like the fabric plies of a tire; (c) A patented process using bias-

cut tape reinforcements for maximum strength; and (d) A tough, long-wearing rubber cover, similar to the tread of a tire. When these parts are vulcanized, they are bonded firmly together to form a strong cohesive one-piece unit. Another design feature embodied in the company's athletic balls is a patented chamber called the "Sunruco Pressure-Seal Chamber." The complete line consists of two basketballs, a football, volleyball, soccer ball, and a water polo ball.

Mouse Lure for Fishing

A new rubber fishing lure, shaped in the form of a mouse, has been introduced by Pachner & Koller, Inc., 3454 Archer Ave., Chicago 8, Ill. The mouse lure is said to be one of the most effective surface lures ever developed. It can be cast in snags, weeds, lily pads or fallen trees. On retrieving, cups at the sides of the lure make a purring noise, and form ripples which represent a live mouse swimming. The mouse lure is made in two sizes, one for a bait rod and the other for a fly rod. The company also has a number of other rubber lures, including a frog, shiner, softshell crab, cricket.

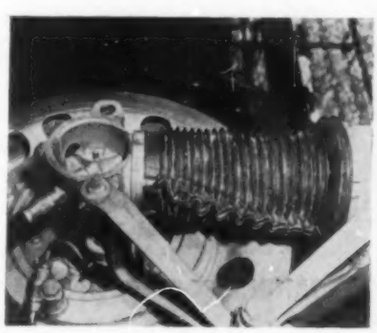
Neoprene Sponge Head Mop

A new self-wringing mop which features a soft and close-grained sponge head made of neoprene is being manufactured by the Spartan Co., Minneapolis, Minn. The neoprene sponge is fitted on a metal bracket with rods running through lengthwise. A knob lo-

cated at one end of the bracket is pulled to contract the sponge and squeeze out the water. According to the manufacturers, the oblong shape of the mophead makes it easy to push over the floor. Abrasion resistant, the mophead is also said to rinse clean of dirt and not to shrink or harden when dry.

Dust Excluder Boot

A removable dust excluder boot for the landing gear struts of civilian planes has been developed by the U. S. Rubber Co. to protect precision-ground cylinders and pistons from the harmful effects of



abrasive substances. The boot is corrugated to provide a bellows-like action, permitting free movement of the pistons. It is split lengthwise and laced to permit quick removal for inspection or replacement. The product is made of fabric impregnated with oil-resistant synthetic rubber. The makers claim that it can also be used to protect moving parts of mechanical equipment used on farms and in various mining and manufacturing industries.

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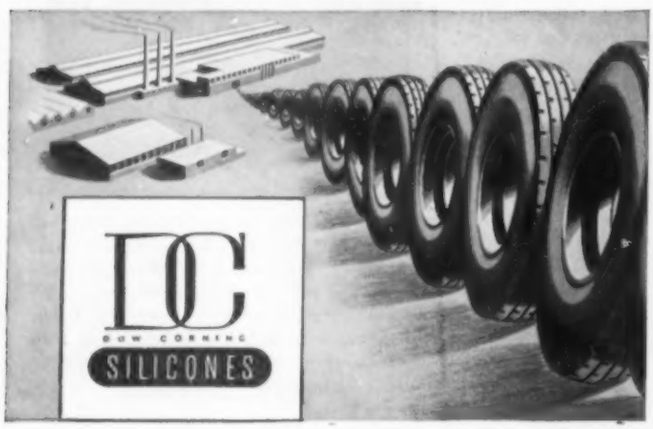
DC mold release emulsion *No. 35*

THE DOW CORNING SILICONE RELEASE AGENT



Many of the major rubber companies are changing to DC Mold Release Emulsion No. 35.

★ **It does not build up on mold surfaces**
Cost of cleaning molds is practically eliminated.

★ **It improves surface quality and reduces scrap**
This silicone mold lubricant gives quick release; does not decompose and therefore gives sharp patterns and clean molded surfaces.

★ **It is inexpensive and easy to apply**
Used in concentrations ranging from 50 to 150 parts of water to 1 part of the Emulsion, one application is frequently sufficient for several moldings. Easily applied by brushing or spraying.

For further information request leaflet V53 from

DOW CORNING CORPORATION, MIDLAND, MICHIGAN

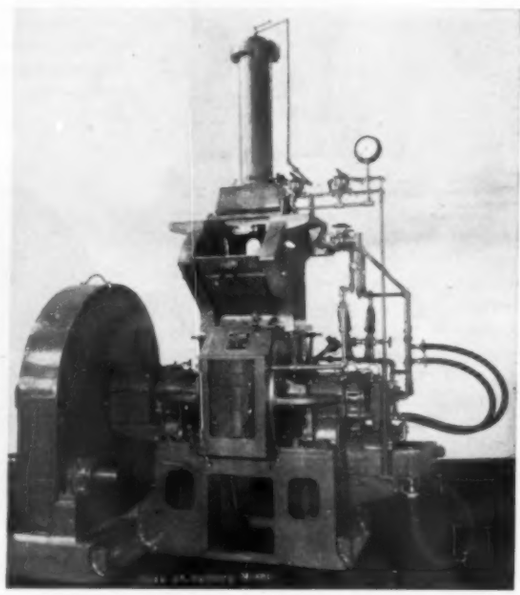
Chicago Office: Builders' Building • Cleveland Office: Terminal Tower
New York Office: Empire State Building
In Canada: Dow Corning Products Distributed by Fiberglas Canada, Ltd., Toronto

Dow Corning
FIRST IN SILICONES

NEW EQUIPMENT

New Size 1A Banbury Mixer

A new small size Banbury Mixer, known as the 1A, has been introduced by Farrel-Birmingham Co., Inc., Ansonia, Conn., for the rubber and plastics industries. Developed originally for mixing small batches of neoprene stock, the 1A is said to be equally adapted for other natural and synthetic rubber and plastics stocks. It is identical in design with the larger Banburys and



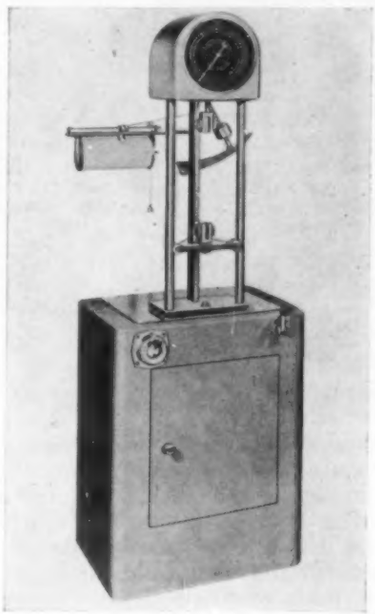
duplicates the mixing conditions and efficiency of the larger capacity machines.

The steel mixing rotors of the new Banbury are cored for circulation of temperature regulating medium, coated with abrasion resistant metal on their peripheries and fitted with end-thrust adjustment. The mixing chamber sides can be either the spray-cooled type as shown, or the cored type arranged for either heating or cooling. The end frames are heavy Meehanite castings, fitted with bronze bushings for the main bearings, which are provided with pressure grease lubrication. The four dust stops where the rotors pass through the end frames are force-feed lubricated. The steel, cut-tooth gears are completely enclosed in metal guards and operate in an oil bath.

For accurate control of temperature during the mixing operation, this Banbury is provided with a potentiometer pyrometer, which has a thermocouple in direct contact with the batch to provide accurate temperature readings throughout the entire mixing cycle. The machine is also provided with a telechron-operated timing device with batch instruction charts. This instrument flash-signals the operator each time an ingredient is to be added to the batch, thus assuring uniformity in successive batches. The size 1A has a capacity of 24 pounds of crude natural rubber, or the specific gravity of the stock multiplied by 24. The net volume of the mixing chamber is 1193 cubic inches.

Dillon Low-Range Tester

W. C. Dillon & Co., Inc., 5410 West Harrison St., Chicago 44, Ill., has introduced a new low range tester, designed for light materials or small finished items. The tester has four separate capacities incorporated, each available instantly, and shown individually on its large dial. These ranges are 0 to 10 pounds in 1 ounce dial divisions, 0 to 25 pounds in 2 ounces, 0 to 50 pounds in 4 ounces, and 0 to 100 pounds in 8 ounces. The tester's lower grip travel is said to be continuously



variable from 0 to 19 inches per minute. Other features claimed for the tester by the manufacturer are .5% accuracy, pendulum action, maximum-load reading, featherweight and swiveled open grip, stroke limiting switches, forward-reverse switch, elongation gauge, and stress-strain recorder. Over-all height is 63 inches and net weight is 162 pounds. Its forerunner and companion tester of higher capacity is the Dillon Model K.

FOR EASY PROCESSING USE PHILBLACK A

FOR FURTHER DETAILS, SEE AD ON PAGE 628

KORESIN

Tackifier for GR-S

Koresin, t-butyl phenol-acetylene condensate, is available from pilot plant production. It is highly regarded as a tackifier for Buna-S and has been suggested for use in varnishes.

GENERAL PROPERTIES:

Melting Range: 115-130°C.

Color: Tan-Brown.

Soluble in: Hydrocarbons, drying oils, ketones, esters, sec-butanol.

Compatible with: GR-S, oil soluble phenolics, coumarone-indene resins, polyvinyl butyral, polyvinyl chloride, methyl methacrylate, ethyl cellulose.

Available in 350-pound Fiberpaks.

Inquiries from rubber fabricators, manufacturers of paints and varnishes, and others are welcomed.

For information and samples of this synthetic resin, write:

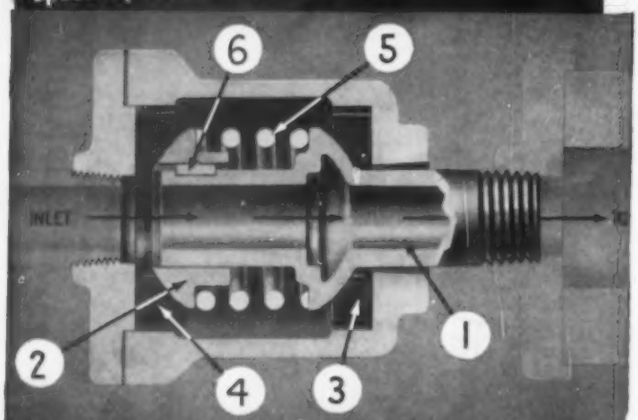
General Aniline & Film Corporation

Development Department

247 Park Avenue, New York 17, New York

4 Good Reasons Why JOHNSON ROTARY JOINTS

Speed Up Production and Cut Down Maintenance



1. **COMPLETELY PACKLESS.** Rotating member consists of nipple (1) and sliding collar (2), keyed together (6). Seal is accomplished by carbon graphite seal ring (3), forced by pressure tightly against nipple. Positive seal—no stuffing boxes or steam fits to repack. Carbon graphite ring (4) serves as bearing.

2. **SELF-OILING.** Seal ring (3) and bearing ring (4) are of long-lived carbon graphite—require no lubrication. Your maintenance man will go for this in a big way.

3. **SELF-ADJUSTING.** Spring (5) is for initial seating only. Joint in operation is pressure sealed; the higher the pressure, the tighter the seal, as it should be. No lost time due to repacking or repairing because of misalignment.

4. **SELF-ALIGNING.** Ball and socket joints between rotating member and rings compensates for angular misalignment of pipe. Space between nipple and housing provides for lateral misalignment.

● Yes, Johnson Rotary Pressure Joints end all the troubles of the old style stuffing boxes and steam fits. In addition, they provide a simple way to install more efficient methods of syphon drainage. And—very important—is the fact that Johnson Joints can pay their own way out of savings in maintenance alone.

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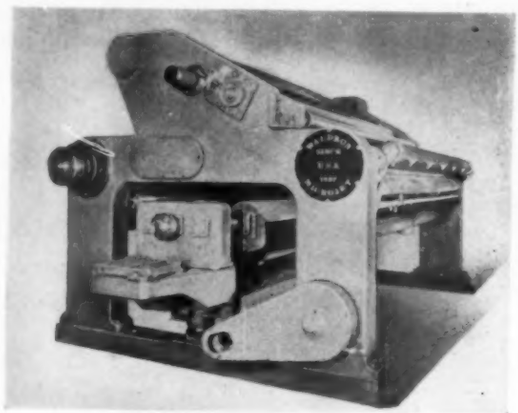
with the Johnson Separator. Employs the two best principles of separation—expansion and change of direction; removes 99% plus of trouble-causing water, dirt and oil from compressed air. Simple design and construction insures long life. Also available for service on steam lines.

Write for Bulletin on Johnson Separation Devices

Waldron Microjet Coating Machine

The "Microjet" Coater has been developed by the John Waldron Corp., New Brunswick, N. J., for the application of gums, emulsions, resins, aqueous coatings and other types of coatings in a controlled uniform manner. The coater is said to constitute the first completely coordinated coating machine to replace the



groups of individual pieces of equipment that heretofore have been assembled for such work.

According to the manufacturer, this coating machine involves a new and different principle. The coating is applied through the medium of a roll in an excess amount. The Microjet coating head, which is an air blade fitted with a slot, planes off the amount of coating not needed and the amount of coating left on the surface is uniformly distributed. No roll, doctor, or brush touches the coated surface after the coated web passes in front of the Microjet air blade. This means that the coating is undisturbed and is free of marks and scratches of any kind.

The equipment includes a specially designed flying splice unroll stand; the coater with air compressor and tension control attachment; a straight pass conveyor type air dryer; a tension control unit, and an automatic winder. The machinery is heavily constructed. All drives are enclosed. The complete Microjet coating system is fitted with a variable voltage drive and a loop control device, as well as moisture regulating and recording instruments.

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for RED RUBBER

RARE METAL PRODUCTS CO.

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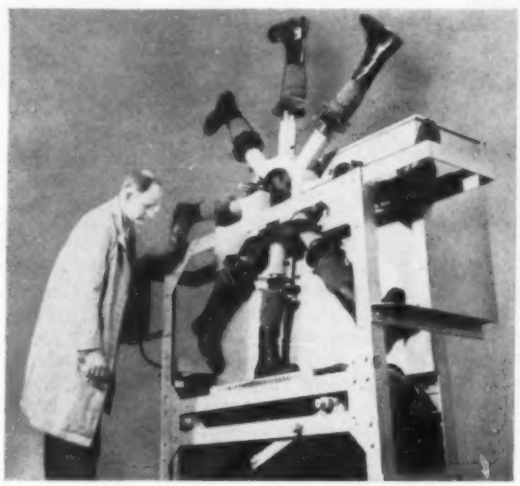
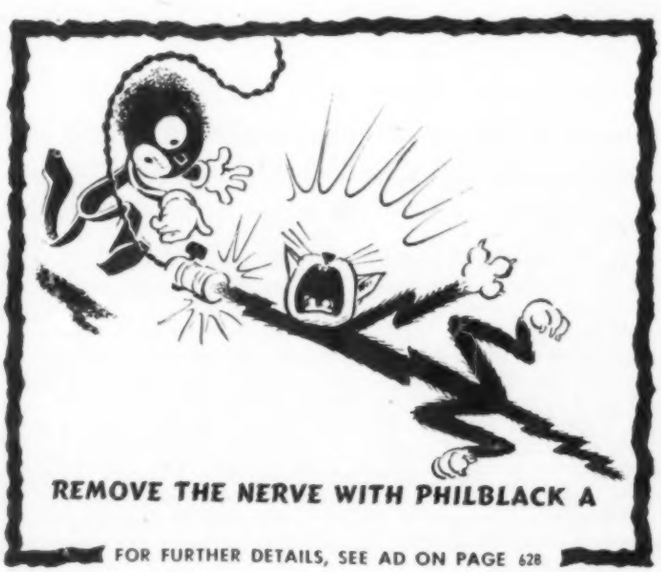
Flex Testing Rubber Footwear

The "Octa-Ped" is a new and unusual addition to the footwear testing equipment at the laboratories of the Mishawaka Rubber & Woolen Manufacturing Co., Mishawaka, Ind. Developed originally by the National Bureau of Standards, and adapted by the Mishawaka



The "Octa-Ped" in operation

concern, the eight-legged walking machine flex tests rubber footwear. Legs, made of special plastic compound, bend and flex just like the human foot. The eight legs rotate clockwise, walking on a belt moving in the same direction and cover 133 miles every 24 hours subjecting the footwear to the stress and strain similar to that encountered in everyday wear. The Octa-Ped will be used to supplement, rather than replace, on-the-job wear tests. It will merely speed up the flexing tests so that instead of waiting several months for the verdict, the results can be determined in a matter of days.



FOR FURTHER DETAILS, SEE AD ON PAGE 628

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Gives Balanced Vulcanization to GR-S—Natural Rubber Mixtures . . .

What happens in mixtures? Too little vulcanization for the GR-S and too much for the natural rubber.

Ridacto with thiazoles selectively balances vulcanization of the mixture.

Other Advantages of RIDACTO . . .

Flatter modulus with GR-S
Better Heat Life with GR-S
Prevents Reversion with Natural Rubber
Inexpensive

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A good value. Very active. High Magnesia content, low in impurities. Medium density.

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All types can be furnished. Specially ground to meet the exacting Code Pigment Specifications of the Rubber Trade. Unground types for chemical uses.

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TRENTON, N. J.—General Supply & Chemical Co.

REVIEWS

BOOKS

Emulsion Technology: Theoretical and Applied. (Second Edition). Edited by H. Bennett. Published by the Chemical Publishing Co., Inc., 234 King St., Brooklyn 31, N. Y. 5½ x 8½ in. 360 pp. $6.50.

"Enlarged, and containing a comprehensive section on the "Theory of Emulsion and Emulsifying Agents," this second edition of "Emulsion Technology" has been completely revised and brought up-to-date. Handled in the form of a symposium, with sections contributed by leading authorities, the book covers the application of emulsions in many industries and technical processes. A special feature of the new edition is a comprehensive list of emulsifying agents divided into the following categories: Anion Active Agents, Cation Active Agents, Non-Ionic Agents, and Miscellaneous Emulsifiers. This list, arranged alphabetically, includes trade names, chemical composition, emulsion type, references, manufacturer, and recommended uses of the emulsifying agents. A 13-page chapter on "Rubber Latex" was contributed by H. P. Stevens and W. H. Stevens, consultants to the Rubber Growers Association. A subject index is included.

•

Theory and Practice of Filtration. By George D. Dickey and Charles L. Bryden. Published by the Reinhold Publishing Corp., 330 West 42nd St., New York 18, N. Y. 6 x 9 in. 346 pp. $6.00.

Since filtration is essentially a process of purification which occurs constantly in modern life and since it would be impractical to attempt to produce an all-inclusive volume on filtration, the authors of this book have wisely limited it to the general concept of filtration as applied to the separation of solids from liquids and gases by the use of porous media. The book is divided into two distinct parts, the first treating with history, theory and principles, and the second with the various types of filters and data pertaining thereto. The major portion of the book deals with filters and auxiliary apparatus, including typical data. Brief mention is made of the use of rubber as a filter medium, particularly of U.S. Rubber's "Multipore" material, and of the equipment used for handling rubber products, including reclaimed rubber. The book has 19 chapters in all, and includes a subject index.

•

The Chemistry of the Carbon Compounds. III. The Aromatic Compounds. By Victor von Richter. Edited by the late Richard Anschutz. Published by the Elsevier Publishing Co., Inc., 215 Fourth Ave., New York 3, N. Y. 5½ x 8½ in. 794 pp. $15.00.

As indicated by its title, this volume covers the chemistry of the aromatic compounds. It is a literal translation of Volume II, Part 2, of the German text without revisions and additions to the literature, a procedure adopted by the publishers in order to more quickly provide purchasers of the first two volumes of the work with a complete set. The present volume constitutes the larger portion of Volume II, Part 2, of the corresponding German work. The section on organic free radicals, however, has been shifted to the end of Volume IV, where it logically belongs. One new feature of the present English edition is that, wherever possible, the references are given to the original journals and not to *Chemisches Zentralblatt*, and that names of the authors have been added.

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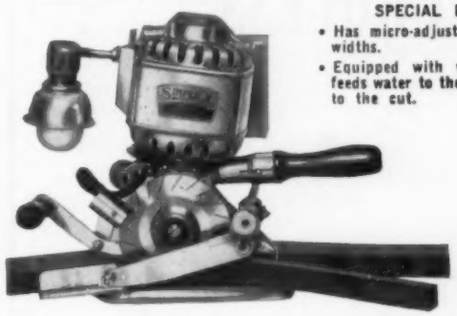
A PORTABLE machine capable of stripping slab rubber up to 1″ thick at the rate of 20,000 feet in 8 hours. Any width desired.



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- Has micro-adjustment for accurate widths.
- Equipped with water tank which feeds water to the slotted knife and to the cut.
- Has repulsion-induction motor which carries any overloads.
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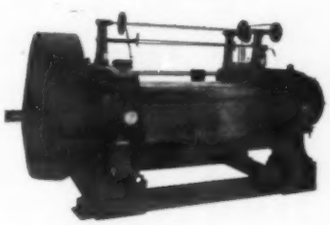

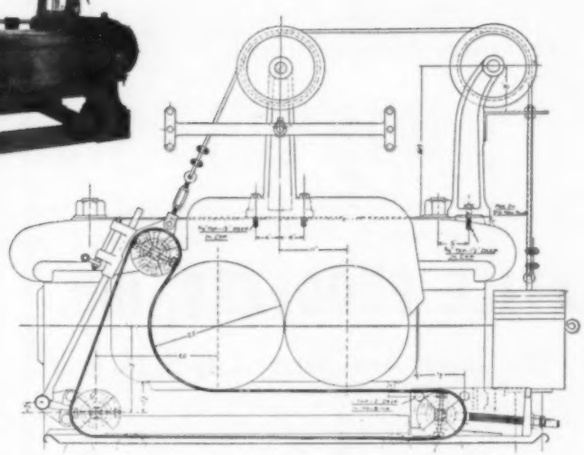

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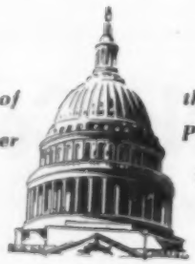

the Capitol Process

REVIEWS (CONT'D)

Modern Organic Finishes. By Rollin H. Wampler. Published by the Chemical Publishing Co., Inc., 234 King St., Brooklyn 31, N. Y. 5½ x 8½ in. 452 pp. $8.50.

Prepared for industrial users of organic protective and decorative coatings, this book is primarily one of methods. Descriptions of modern finishing materials and of equipment for application, drying, and conveying are presented so that the reader may have an over-all picture of modern industrial finishing operations. Throughout the text, the main emphasis is on proper selection and proper use of materials and equipment to get the best possible finish at minimum cost. The book is divided into six sections, as follows: Modern Organic Finishing Materials; Modern Application Methods; Drying Methods; Product Handling in the Finishing Department; Finishing Processes; General Considerations. Brief reference is made in the book to rubber-base paints. A special bibliography and a subject index are included.

BOOKLETS, CATALOGS, etc.

Jessop Steels Cast-to-Shape. Jessop Steel Co., Washington, Penna. 8½ x 11 in. 16 pp.

Well written and extensively illustrated, this booklet describes how various types of steel manufactured by the company can be used in dies, forming tools, gauges, hobs, rolls and numerous other products. Annealing, hardening, and tempering data on the company's water hardening, air hardening, and oil hardening steels is presented. A Comparative Rockwell Sclerescope and Brinell Hardness Table and a Temperature Conversion Table are also included.

•

Dexter Knives, Blades and Handles. Russell Harrington Cutlery Co., Southbridge, Mass. 8½ x 11 in. 12 pp.

The company's varied line of mill knives used in rubber factories for cutting rubber off mill rolls and in the production and repair of tires is illustrated and described in this catalog. A section devoted to mill blades and blade handles contains photographs of the company's long bevel point and flat grind curved point blades and single end and double end blade handles.

•

Plastone. Standard Chemical Co., Akron Savings and Loan Bldg., Akron, Ohio. 8½ x 11 in. 4 pp.

This technical report is devoted to a description of the company's plasticizer and peptizer for synthetic, natural, and reclaimed rubbers. After a brief discussion of the general properties and advantages of the material, laboratory test results and recommendations for its use in natural and synthetic rubber stocks are presented.

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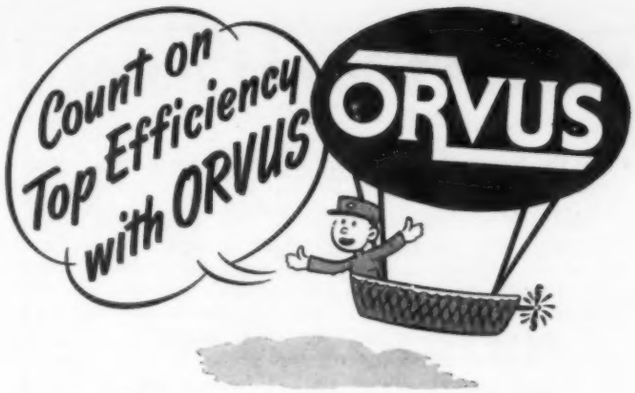

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THE CARTER BELL MFG. CO.
SINCE
CARTER BELL PRODUCTS
1903
SPRINGFIELD, NEW JERSEY

From the Research Laboratory to the Armed Forces. Mellon Institute, Pittsburgh, Penna. 5⅛ x 7⅝ in. 40 pp.

This booklet contains a series of six radio talks which describe the essential research programs headed by the authors and gives summaries of the results. The subjects were selected to illustrate a few of the Institute's activities and contributions during World War II. Included among the talks is one on "The Triumph of Synthetic Rubber," by Charles F. Winans, a member of the research department of Koppers Co., Inc., Pittsburgh, Penna. Other talks include "Research in the Conquest of Malaria," "Research Improves Resistors for Radio and Radar," "Maintaining Workers Health in the Industries," "Science Solves Pressing Textile Problems," and "Good Strokes in Life Preserver Research."

•

Di-Acro System of Die-Less Duplicating. (Catalog No. 46-10). O'Neil-Irwin Manufacturing Co., Minneapolis 15, Minn. 8½ x 11 in. 44 pp.

The material contained in this catalog summarizes the developments which have been made on the company's precision machines during the war years and points out how these improvements can be applied now for civilian production and development work. Complete descriptions and illustrations of the company's latest models are given throughout. One section of the catalog is devoted entirely to questions and answers on Di-Acro benders, brakes and shears.

•

Dutrex 30: A Light Process Oil for Neoprene. (Report No. 1). Shell Oil Co., Inc., 50 W. 50th St., New York 20, N. Y. 8½ x 11 in. 44 pp.

Some interesting technical information on Dutrex 30, a new softener and compounding aid for neoprene, is contained in this report. Data illustrating the effect of the material on processing characteristics and vulcanization in a range of loadings in representative neoprene formulas is presented and examples of its use in a number of recipes for certain specific practical applications are described. An explanation is also given of the compounding and test procedures.

•

Waldron Series "A" Flexible Couplings. (Catalog No. 57). John Waldron Corp., New Brunswick, N. J. 8½ x 11 in. 20 pp.

This catalog describes and illustrates standard models of gear couplings manufactured by the company, as well as special types of gear couplings, including the vertical floating shaft type, the brake wheel or pulley type, and the oil collector type. The standard models include the heavy duty, mill motor and floating shaft types. A table of service factors, which presents a simple method for computing the required coupling capacity, is included.

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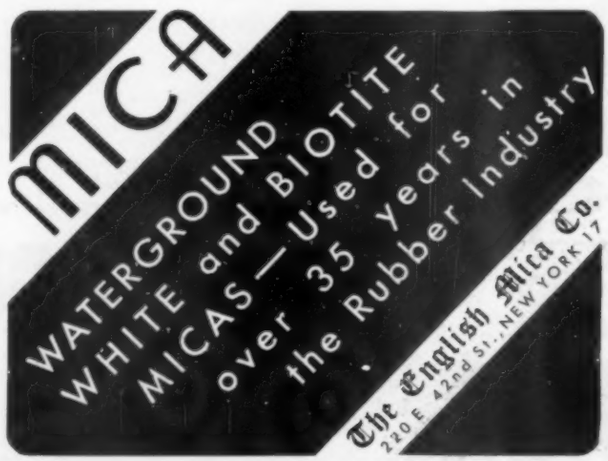
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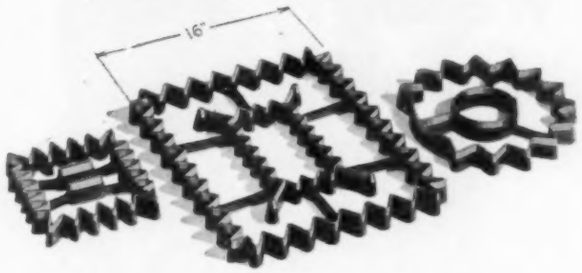

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RAYON PROCESSING CO. of R.I. INC.
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Developers and Producers of Cotton Fillers for Plastics

Vulcanizers and Autoclaves. (Catalog No. 461). Adamson United Co., Akron, Ohio. 8½ x 11 in. 12 pp.

The outstanding features of the company's vulcanizers and autoclaves for the rubber, plastics and plywood industries are described in this catalog. Numerous excellent photographs and schematic diagrams are employed effectively to illustrate ten types of vulcanizers manufactured by the company. Included among the vulcanizers described are the screw-operated lift door type, which is built in sizes up to 15 feet in diameter, the cable-operated lift door type, the vertical vulcanizers with quick-opening and power-operated type doors, the horizontal vulcanizers with quick-opening, breech lock, davit and hinge-type doors, and the horizontal and vertical ram-type vulcanizers. A brief description of the single shell and jacketed autoclaves is also included.

•

Darex Copolymers. Dewey & Almy Chemical Co., Cambridge 40, Mass. 8½ x 11 in. 6 pp.

The general chemical and physical properties of Darex Copolymers 2 and 3, the company's special purpose synthetic rubbers, are briefly described in this technical report. Results of physical tests on various GR-S and natural rubber compounds incorporating Darex Copolymer 3 are given. Data is also presented on two compounds, one which compares the two copolymers in GR-S compounds and the other which compares the two copolymers with GR-S. In addition, a list of suggested commercial applications for the copolymers is included.

•

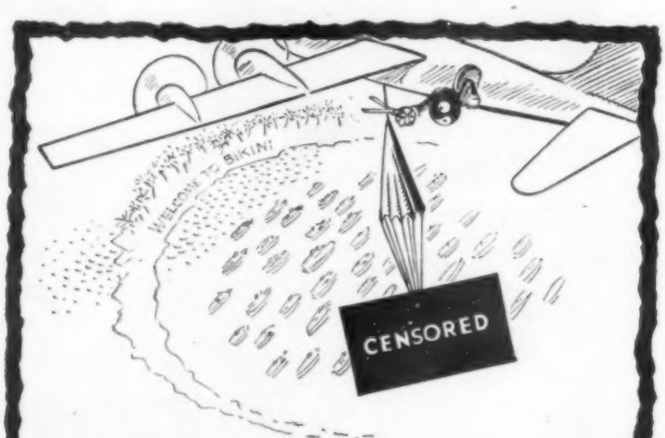
Santicizer 160. (Technical Bulletin O-D-110). Monsanto Chemical Co., St. Louis, Mo. 8½ x 11 in. 24 pp.

The chemical and physical properties of the company's new plasticizer, designed for use in polyvinyl chloride, polyvinyl chloride-acetate and polyvinyl butyral resins, are described in this technical bulletin. The material's compatibility limits, volatility, low temperature flexibility, abrasion resistance, moisture resistance, oil resistance, and heat and light stabilities in a wide variety of resins are presented and suggested applications are discussed.

•

The Arneels as Plasticizers. Armour & Co., Chemical Division, 1355 West 31st St., Chicago 9, Ill. 8½ x 11 in.

The company's aliphatic nitriles derived from the fatty acids are discussed in this bulletin. The chemical and physical properties of the Arneels as a group are first described, and then the processing characteristics of Arneel TO and Arneel TOD in a butadiene-acrylonitrile rubber recipe are presented.



FOR HIGH TENSILE USE PHILBLACK A

FOR FURTHER DETAILS, SEE AD ON PAGE 628

PIGMENTS and CHEMICALS for the RUBBER INDUSTRY

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MARKETS

Rubber – Crude, Reclaimed and Scrap – Cotton – Ducks – Tire Fabrics – Sheetings

NEW YORK, SEPT. 7, 1946

Natural Rubber

ON SEPTEMBER 6 Reconversion Director R. Steelman issued a directive to the Reconstruction Finance Corporation to maintain the sale price for natural rubber at 22½ cents a pound until the end of the year. The directive overrode objections of the RFC which insisted that the price be raised to at least equal the current cost of natural rubber from the Far East to the United States, which is currently between 25 and 26 cents delivered. Both the CPA and the OPA, however, requested that the 22½ cent figure be maintained in the interest of holding the price line.

The probability that free trade in rubber after the turn of the year will be restored becomes more likely with daily developments. Based on news from producing areas, there seems to be every reason to feel that not only would the releasing of rubber from controls be feasible but would be more sound from an economic standpoint. This reasoning is based on the fair assurance that natural rubber will soon be in plentiful supply to not only provide for strategic stockpiling, but to amply provide for world wide requirements.

British Malaya seems to be well in the lead of the producing countries insofar as production and shipments of natural rubber are concerned. It is reliably reported that purchases by American importers from the United States Government, to the extent of the allotment made by producing countries in the Far East to the United States, i. e., 145,000 tons, have already been completed. These purchases are made by the importers under a special arrangement provided by the Office of Rubber Reserve. It is this situation which is heralding the early return of free trading.

Prices shown below are those established by the Office of Rubber Reserve:

	C	N-C
Plantations—		
Ribbed Smoked Sheets, 1X	22½	40
Thick Pale Latex Crepe, 1X	22½	40
Thin Pale Latex Crepe, 1X	22½	40
Thick Brown Crepe, 1X	21¾	38¾
Thin Brown Crepe, 1X	21¾	38¾
Thick Remilled Blankets, #1	21¾	38¾
Rolled Brown or Flat Bark	18	35½
Smoked Blankets, #1	21¾	38¾
Claro Brand 1XRSS	22½	40
Sole Crepe Trimmings	22	39½
Sole Crepe	22½	40
Wild—		
Uncut Fines, Crude	15	29
Cut Fines, Crude	15½	29¼
Cut Fines, Washed & Dried	22½	40
Upriver Coarse, Crude	12¾	26¾
Upriver Coarse, Washed & Dried	20¼	37¼
Caucho Ball, Crude	11¾	24¾
Caucho Ball, Washed & Dried	19½	37
Guayule—		
Carload Lots	17½	31
Less than Carload Lots	18	31½
Balata—		
Surinam Sheet	42½	42½
Manaos Block	38¾	38¾
Colombian Block	38¾	38¾
Peruvian Prime	38¾	38¾
Chicken Wire	23¼	23¼
Latex—		
Normal, Tank Car Lots	26	43½
Creamed, Tank Car Lots	26¾	44¼
Centrifuged, Tank Car Lots	27¾	45¼
Heat-Concentrated, Carload Drums	29½	47

C for Civilian Use; N-C for Non-Civilian Use.

Scrap Rubber

Although the supply of scrap continues in adequate amount, scrap rubber dealers report an increased reluctance on the part of reclaimers to accept scrap loaded with synthetic. The rejection point is fairly general at 10%, with some reclaimers allowing a liberal 15%. The result of this situation is that many dealers are becoming bitter over the attitude of the trade, and general inactivity has settled upon the industry. The only scrap said to be moving easily is tube stock. On August 19 OPA established a price of $17.50 as a ceiling for splitting beadless tires. The ceiling for beaded tires remains at $15.88. Prices shown below are ceilings on typical grades of scrap:

(Prices to Consumers, Delivered Akron)

Mixed passenger tires	ton	$20.00
Beadless truck tires	ton	26.00
Mixed truck tires	ton	20.00
Beadless passenger tires	ton	26.00
No. 1 passenger peelings	ton	52.25
No. 1 truck peelings	ton	52.25
No. 2 passenger tubes	lb.	.07¼
Red passenger tubes	lb.	.07½
Black passenger tubes	lb.	.06¾
Mixed passenger tubes	lb.	.06½
No. 2 truck tubes	lb.	.07½
Red truck tubes	lb.	.07¼
Black truck tubes	lb.	.06½
Buffings	ton	35.00
Bicycle tires	ton	15.00
Air bags and water bags	ton	15.00
Boots and shoes	ton	33.00

Tire Fabrics

The supply of tire fabrics, both cotton and rayon, is tightening up again, after a brief respite, and tire manufacturers report shortened inventories. Additional price relief granted to cotton textile manufacturers, however, may relieve the tightened situation in the next few weeks, at least as far as cotton tire fabrics are concerned. After September, monthly cotton textile prices will be based on the average of market prices. The decision was reached by OPA and announced on August 26 after a series of conferences with industry representatives, most of whom were in favor of shorter base periods. It was argued, however, that a monthly average comes well within the definition of "current costs" provided in the new price control law. Prices shown below are of typical grades of cotton cord:

Standard, Peeler, 12/4/2	lb.	.5276
Standard, Peeler, 14/4/2	lb.	.5381
Standard, Peeler, 16/4/3	lb.	.5486
Extra Staple, Peeler, 12/4/2	lb.	.6011
Extra Staple, Peeler, 14/4/2	lb.	.6116
Extra Staple, Peeler, 16/4/3	lb.	.6221

Note: Under OPA regulations mills in Band A add 7.98% to the above prices; mills in Band B add 4.55%.

Sheetings

48x40	36	in.	5.50	lb.	—	@ 8.272
40x40	36	in.	6.15	lb.	—	@ 7.398
40x36	36	in.	6.50	lb.	—	@ 7.000
48x48	40	in.	2.50	lb.	—	@17.200
48x48	40	in.	2.85	lb.	—	@15.087
56x60	40	in.	3.60	lb.	—	@12.638
48x44	40	in.	3.75	lb.	—	@11.733

Note: Prices shown above are ceiling prices set by order of the O.P.A.

Cotton

The price of middling uplands on the Cotton Exchange covered a 138 point range since our last report (August 13), high for the period being 37.79 today (September 7) and low 36.41 on August 19. The average price for middling uplands for the month of August was 36.31, based on 22 trading days. Prices fluctuated irregularly for the first two weeks of the period, reflecting the absence of important developments in the cotton situation and the general inclination of the trade to move slowly pending issuance of new textile ceiling prices by the OPA. Contributing to the subsequent improvement in prices during the latter part of August and the beginning of September was the announcement by the OPA that cotton textile prices were to be advanced an average of 2½% at the producer level, and reports that Brazil had prohibited exports of cottonseed, cotton fibers and textiles. Also influencing the upward trend were reports that an increasing number of foreign countries were seeking credits for the purchase of American cotton, and the expectancy that the second official crop report might show a decrease over the August 1 indication. Reports that no change in the export subsidy payment rate is contemplated in the near future are expected to maintain prices at current or even higher levels. Quotations of middling uplands on the Exchange follow:

	August 13	September 7		
	Close	High	Low	Close
October	35.82	37.00	36.47	36.94
December	35.85	37.00	36.43	36.98
March	35.60	38.85	36.20	36.82

Reclaimed Rubber

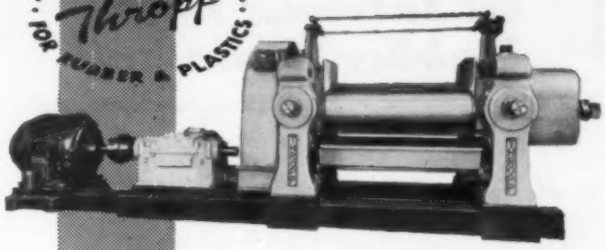
After a brief respite due to the combination holiday-vacation schedules maintained by most rubber manufacturers, the demand for reclaimed rubber has again swung upward toward the peak level attained in recent months, and again is apparent from all branches of the industry. The intensiveness of the domestic demand can best be realized from the fact that although export requests reach reclaimers daily, few shipments are being made abroad. The current shipping strike is holding up what few export shipments are to be made. The labor situation seems to be completely in hand, and most reclaimers report maximum production. Prices shown below are ceilings on typical grades of reclaim:

Shoe				
Unwashed	lb.	.08	@	.08¼
Tube				
Black Tube	lb.	.12¼	@	.12½
Red Tube	lb.	.13	@	.13¼
Tires				
Black (acid process)	lb.	.08½	@	.08¾
Black, selected tires	lb.	.07½	@	.07¾
Truck, Heavy Gravity	lb.	.09½	@	.09¾
Miscellaneous				
Mechanical blends	lb.	.05½	@	.06½
White	lb.	.14	@	.14¼

Ducks

Enameling (single filling)	lb.	—	@	.44¼
Belting and Hose	lb.	—	@	.39
Single filling, A grade	lb.	—	@	.19¾
Double filling, A grade	lb.	—	@	.20¾

CUSTOM BUILT Thropp FOR RUBBER & PLASTICS



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Extra Heavy Duty Individual Motor Driven Mill with 15" diameter journals, having 150 H.P. enclosed herringbone gear drive. Machine is equipped with solid bronze lined bearings having oil closure seals on side of the boxes facing the rolls to prevent oil contamination of the stock. Steel cut connecting gears and Johnson Rotary Joints. Manual mechanical lubricator and new style guides bored to fit the rolls. This is just one of the many new Thropp precision built mills designed to speed up post war production.

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WM. R. THROPP & SONS CO.
Trenton, N. J.

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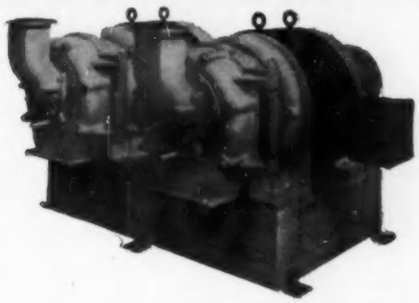
UNIQUE
PROCESSING EQUIPMENT

FRIGIDISC GRINDERS



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STATISTICS *Of Interest to the Rubber Industry*

U. S. Imports and Re-Exports of Natural Rubber

	GROSS IMPORTS										RE-EXPORTS		TOTAL NET IMPORTS
	Natural Rubber (Dry)			Natural Rubber (Latex)			Guayule						
Year	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Total Gross Imports Long Tons	Long Tons	Total Declared Value	Long Tons
1936	467,064	152,072,496	14.54	19,852	6,659,899	14.98	1,229	286,552	10.41	488,145	12,581	4,488,223	475,564
1937	574,600	237,307,041	18.44	23,185	10,213,670	19.67	2,694	745,873	12.36	600,479	7,902	3,385,433	592,577
1938	397,620	125,357,730	14.07	11,878	4,147,318	15.59	2,485	623,819	11.21	411,983	5,652	1,799,124	406,331
1939	469,803	167,558,245	15.92	27,438	10,467,552	17.03	2,232	463,345	9.27	499,473	13,125	5,832,618	486,348
1940	780,820	303,117,726	17.33	33,789	14,593,466	19.28	3,634	758,007	9.31	818,243	7,060	3,197,136	811,183
1941	989,329	401,890,393	18.14	34,798	15,965,627	20.48	4,881	1,145,767	10.48	1,029,008	5,376	2,757,872	1,023,632
1942	265,980	112,377,896	18.86	10,646	5,630,667	23.61	5,523	1,660,792	13.42	282,149	10,856	5,913,386	271,293
1943	50,348	31,364,033	27.81	1,890	1,312,202	30.99	7,679	3,636,789	21.14	59,917	22,587	16,446,707	37,330
1944	103,820	73,908,389	31.78	3,091	2,092,211	30.22	6,700	3,351,233	22.33	113,611	9,739	8,712,695	103,872
1945	134,454	95,850,441	31.82	4,773	3,115,853	29.14	10,040	5,963,797	26.52	149,267	9,509	7,201,746	139,758
1945:													
Jan.	15,626	11,125,299	31.71	206	134,890	29.18	880	476,377	24.17	16,712	1,316	1,024,712	15,396
Feb.	16,592	11,915,425	32.06	402	262,604	29.15	1,843	1,053,328	25.51	18,837	729	625,824	18,108
Mar.	10,254	7,297,267	31.77	434	283,209	29.13	652	384,518	26.33	11,340	1,979	1,420,759	9,361
Apr.	9,743	6,815,597	31.23	253	164,965	29.15	807	486,473	26.91	10,803	1,560	1,148,184	9,243
May	10,375	7,560,578	32.53	235	153,481	29.15	865	525,953	27.14	11,475	208	145,880	11,267
June	7,991	5,467,478	30.54	692	451,629	29.15	675	412,213	27.26	9,358	456	347,623	8,902
July	9,568	6,973,890	32.54	336	219,469	29.15	605	371,245	27.39	10,509	620	455,658	9,889
Aug.	9,741	6,880,325	31.53	624	407,677	29.15	841	506,655	26.91	11,206	894	824,976	10,312
Sept.	9,870	7,050,795	31.89	626	408,651	29.15	668	409,535	27.38	11,164	406	310,128	10,758
Oct.	10,673	7,645,618	31.98	287	187,422	29.15	646	391,971	27.07	11,606	562	369,296	11,044
Nov.	11,177	7,844,162	31.33	296	193,252	29.15	739	446,925	27.65	12,212	254	179,321	11,958
Dec.	12,844	9,273,507	32.24	382	248,604	29.15	819	498,604	27.20	14,045	525	349,385	13,520
1946:													
Jan.	18,580	13,515,971	32.48	569	371,857	29.15	446	263,279	26.33	19,595	164	41,992	19,431
Feb.	32,690	23,944,266	32.70	...	.....	....	318	171,823	24.10	33,008	723	444,400	32,285
Mar.	31,093	22,520,391	32.33	504	328,905	29.15	160	87,344	24.34	31,757	714	488,044	31,043
Apr.	26,234	18,997,757	32.33	1,001	808,463	36.06	874	467,151	23.86	28,109	392	243,952	27,717
May	4,338	3,314,818	30.9	1,052	687,100	29.1	430	219,830	22.9	5,820	422	419,278	5,398
June	8,518	6,132,895	32.2	561	366,165	29.1	466	244,580	23.4	9,545	460	446,253	9,085

Source: U. S. Department of Commerce.
Notes: (1) Figures for latex are on a dry weight basis. (2) Figures for re-exports include natural rubber (dry and latex) and guayule.

Natural Rubber
(Including Latex and Guayule)

(All Quantities in Long Tons)

Year	New Supply	Consumption	Re-Exports	Stocks On Hand at End of Period
1936	488,145	575,000	12,581	223,000
1937	600,479	543,600	7,902	262,204
1938	411,983	437,031	5,652	231,500
1939	499,473	592,000	13,125	125,800
1940	818,243	648,500	7,060	288,864
1941	1,029,007	775,000	5,376	533,344
1942	282,653	376,791	10,856	422,714
1943	55,329	317,634	20,815	139,594
1944	107,834	144,113	9,665	93,650
1945	135,672	105,429	6,743	118,715
1945:				
Jan.	15,742	11,411	802	97,179
Feb.	20,427	10,228	425	106,953
Mar.	9,146	10,983	1,797	103,319
Apr.	10,046	9,793	867	102,705
May	10,067	10,164	130	102,478
June	9,940	8,995	204	103,219
July	8,739	7,698	756	103,504
Aug.	10,259	7,392	777	105,594
Sept.	12,150	5,799	568	111,385
Oct.	13,984	7,206	78	118,085
Nov.	7,288	7,575	255	117,543
Dec.	7,884	8,185	92	118,715
1946:				
Jan.	25,143	10,355	209	133,294
Feb.	35,104	10,131	290	157,977
Mar.	35,348	12,792	445	180,088
Apr.	19,847	16,914*	190	182,831*
May	6,126	17,867	327	170,763
June	23,382	16,466	911	176,768

Source: 1936-40, U. S. Department of Commerce; 1941 to date, Civilian Production Administration. * Revised.

U.S. Gross Imports of Balata, Jelutong, Gutta-Percha, etc.

(All Quantities in Long Tons)

	Balata		Jelutong		Gutta-Percha & Other Guttas	
Year	Tons	Value	Tons	Value	Tons	Value
1936	535	199,368	6,163	1,296,364	1,568	555,643
1937	354	151,344	7,109	2,017,786	1,122	440,894
1938	509	181,140	9,132	2,944,504	444	204,582
1939	694	265,553	6,640	1,603,418	1,740	539,255
1940	648	300,500	7,451	2,449,137	2,340	1,004,885
1941	924	489,514	8,821	2,954,001	1,783	607,025
1942	1,544	1,107,059	1,200	530,296	804	525,763
1943	1,047	708,701	35	14,840	...	.....
1944	1,012	660,805	88	45,578	10	4,999
1945	1,361	907,253	....	.....	36	21,970
1945:						
Jan.	121	74,964	....	.....	....	.....
Feb.	24	17,441	....	.....	....	.....
Mar.	150	69,291	....	.....	....	.....
Apr.	36	18,486	....	.....	....	.....
May	110	60,465	....	.....	3	3,244
June	8	6,872	....	.....	....	.....
July	228	128,129	....	.....	....	.....
Aug.	154	80,296	....	.....	....	.....
Sept.	49	52,148	....	.....	5	2,196
Oct.	130	83,173	....	.....	....	.....
Nov.	303	257,246	....	.....	10	6,547
Dec.	48	58,742	....	.....	18	9,983
1946:						
Jan.	129	121,228	....	.....	....	.....
Feb.	38	35,699	....	.....	5	2,178
Mar.	100	70,315	....	.....	....	.....
Apr.	362	261,098	....	.....	....	.....
May	325	212,899	....	.....	....	.....
June	80	80,006	....	.....	....	.....

Source: U. S. Department of Commerce.

★ ★ ★

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Economical — High Solids, no solvents, high coverage

Superior Properties — Non-discoloring, non-tacky, non-blocking, high film strength, low temperature flexibility

Latex Compounds:

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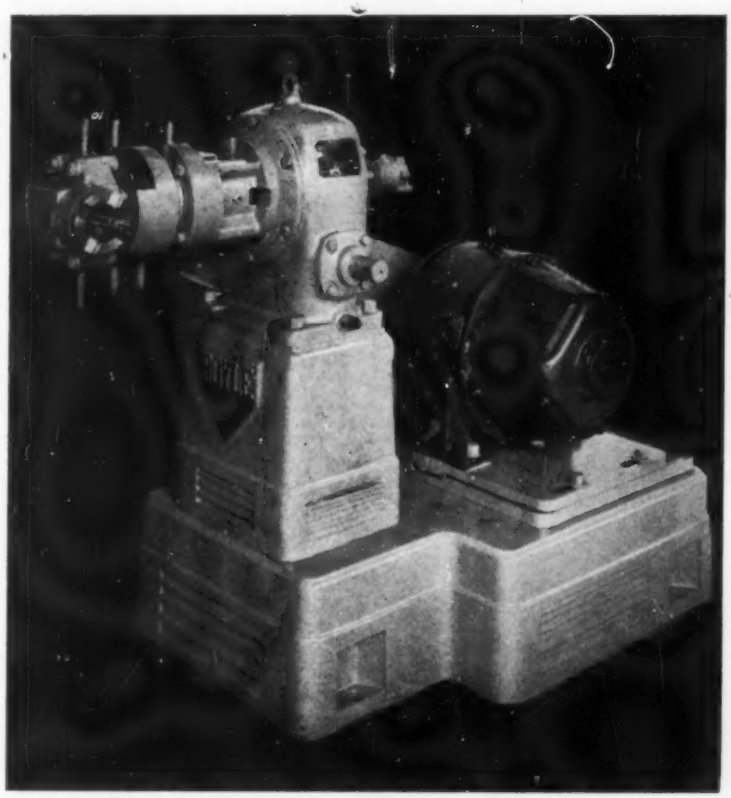

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Rugged is the word to describe this compact and highly efficient Royle continuous extruding machine. It embraces all of the characteristics required for larger and heavier extruding processes.

Primarily designed to become an integral part of laboratory equipment—the technician can be sure that his experiments will have a true relation to actual product extruding—the Royle #1 is an efficient producer of such commercial products as tubes, fine wire insulation, monofilament, and thread coating.

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Pioneered the Continuous Extrusion Process in 1880

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James Day (Machinery) Ltd., London, England—REgent 2430. Home Office: B. H. Davis—J. W. VanRipen—SHerwood 2-8262. Akron, Ohio; J. C. Clinefelter—UNiversity 3726. Los Angeles, Cal.: H. M. Royal, Inc.—LAfayette 2161.

Synthetic Rubber

(GR-S, Neoprene, Butyl, and Buna N Types)

(All Quantities in Long Tons)

Year	Production	Imports	Consumption	Exports	Stocks On Hand at End of Period
1941	8,383	.....	6,259	672	1,702
1942	22,434	.....	17,651	1,419	4,612
1943	231,722	.....	170,891	18,148	41,568
1944	762,630	11,043	566,670	104,266	142,927
1945	820,373	10,407	693,580	83,778	203,454
1945:					
Jan.	79,037	1,040	64,938	9,253	153,170
Feb.	71,530	483	60,400	6,712	160,169
Mar.	77,298	417	63,846	4,664	169,704
Apr.	75,846	751	59,437	6,688	180,487
May	83,309	1,418	62,837	7,435	193,663
June	78,702	1,270	58,627	7,363	203,018
July	78,650	1,428	52,571	12,085	218,369
Aug.	69,703	1,491	54,439	10,856	224,117
Sept.	63,754	928	45,479	3,801	239,683
Oct.	47,317	237	58,667	1,596	226,550
Nov.	48,634	471	56,227	7,984	214,289
Dec.	46,593	473	56,112	5,341	203,454
1946:					
Jan.	56,089	.....	66,993	5,715	177,051
Feb.	51,848	.....	63,770	6,415	144,427
Mar.	60,363	1,429	74,214	17,707	115,310
Apr.	66,014	536	70,703*	12,878*	101,510*
May	66,044	366	70,914	13,102	93,447
June	63,388	415	62,145	3,882	92,045

Source: Civilian Production Administration.
Note: Production figures include the output of privately-owned and government plants. Figures for 1941 are estimated. * Revised.

Synthetic Rubber — By Type

(All Quantities in Long Tons)

New Supply

	GR-S (Buna S)	GR-M (Neoprene)[b]	GR-I (Butyl)	Buna N Types[b]	Total
1942	3,721	8,956	.....	9,734	22,411
1943	182,259	33,603	1,373	14,487	231,722
1944	679,949	56,660	20,252	16,812	773,673
1945	725,000	45,500	51,900	7,900	830,300

Consumption

1942	2,579	6,833	.....	8,217	17,629
1943	131,977	26,205	304	12,405	170,891
1944	495,552	46,243	10,763	14,112	566,670
1945[a]	676,600	48,400	43,700	8,500	777,200

Exports

1942	222	1,037	.....	160	1,419
1943	20,357	2,769	40	709	23,875
1944	99,242	5,093	630	679	105,644
1945	.....	.....	.....	.....	.....

Stocks at End of Period

1942	1,050	1,786	.....	1,772	4,608
1943	30,975	6,415	1,033	3,145	41,568
1944	116,130	11,739	9,892	5,166	142,927
1945	165,000	9,200	18,000	4,700	196,900

Sources: From miscellaneous Government reports.
Notes: (a) Consumption figures for 1945 include exports; (b) Including production of privately-owned plants.

Gasoline Consumption

(In Thousands of Barrels of 42 Gallons)

	1939	1940	1941	1942	1943	1944	1945	1946
Jan.	38,089	40,370	46,190	49,216	36,085	47,540	51,125	51,186
Feb.	34,928	37,557	42,782	42,666	36,274	47,754	49,013	47,889
Mar.	43,042	44,607	49,572	50,820	41,586	52,263	55,449	56,801
Apr.	44,264	47,683	55,879	49,554	48,177	50,005	59,147	62,045
May	49,766	52,946	60,121	53,212	49,828	54,230	60,828	66,774
June	50,133	55,459	59,062	50,077	52,325	54,266	60,597	.....
July	50,689	53,865	63,906	54,606	49,867	55,119	66,218	.....
Aug.	54,025	55,346	63,575	48,793	51,880	55,616	70,027	.....
Sept.	49,505	52,297	59,768	50,093	49,707	56,318	64,550	.....
Oct.	49,854	53,807	58,412	50,094	53,111	53,154	55,743	.....
Nov.	47,407	49,074	54,670	50,729	50,703	54,967	53,581	.....
Dec.	43,807	46,413	53,568	39,250	48,695	52,250	50,129	.....
Total	555,509	589,424	667,505	589,110	568,238	633,482	696,407	.....

Source: U. S. Bureau of Mines.

Reclaimed Rubber

(Including Natural and Synthetic)

(All Quantities in Long Tons)

Year	Production	Consumption Tons	Consumption % to Crude	Exports	Stocks On Hand at End of Period
1936	150,571	141,486	24.6	7,085	19,000
1937	185,033	162,000	29.8	13,233	28,800
1938	122,400	120,800	27.6	7,403	23,000
1939	186,000	170,000	28.7	12,611	25,250
1940	208,971	190,244	29.3	11,347	32,636
1941	274,202	251,231	32.2	13,851	41,750
1942	285,114	254,820	64.6	30,405	42,532
1943	303,991	291,082	59.6	15,678	46,201
1944	260,607	251,083	35.3	11,800	43,832
1945	243,309	241,036	30.2	13,413	28,155
1945:					
Jan.	21,992	20,777	27.2	1,419	43,628
Feb.	20,131	20,760	29.4	1,055	39,444
Mar.	22,042	22,891	30.6	1,409	37,186
Apr.	20,389	20,234	29.2	1,125	36,216
May	22,249	22,459	30.8	971	35,035
June	20,187	19,873	29.4	996	34,353
July	17,033	15,976	26.5	836	34,574
Aug.	18,804	18,663	30.2	834	33,881
Sept.	17,246	17,365	33.9	1,323	32,439
Oct.	22,044	22,185	33.7	1,195	31,103
Nov.	20,560	20,263	31.8	859	30,541
Dec.	20,632	19,590	30.5	1,391	28,155
1946:					
Jan.	24,458	22,031	28.5	1,253	29,099
Feb.	23,187	20,702	28.0	1,368	30,216
Mar.	25,136	22,075	26.0	1,841	31,436
Apr.	23,930*	22,396*	25.8	1,238	31,732*
May	25,322	22,162	24.9	1,338	33,554
June	20,884	21,552	27.4	1,416	35,470

Source: 1936-40, Department of Commerce; 1941 to date, Civilian Production Administration. * Revised.

Automobile Production in U. S.

(Civilian Production Only)

Year	Passenger Cars	Trucks	Total	Year	Passenger Cars	Trucks	Total
1930	2,784,745	571,241	3,355,986	1938	2,000,985	485,852	2,486,837
1931	1,973,090	416,648	2,389,738	1939	2,866,796	704,308	3,571,104
1932	1,135,491	235,187	1,370,678	1940	3,692,328	721,637	4,413,965
1933	1,573,512	346,545	1,920,057	1941	3,744,300	875,381	4,619,681
1934	2,177,919	575,192	2,753,111	1942	220,814	133,083	353,897
1935	3,252,244	694,690	3,946,934	1943	0	4,501	4,501
1936	3,669,528	781,862	4,451,390	1944	0	124,819	124,819
1937	3,915,889	892,382	4,808,271	1945	83,792	313,643	397,435
1945							
Jan.	0	15,019	15,019	July	359	31,394	31,753
Feb.	0	14,032	14,032	Aug.	1,381	27,532	28,913
Mar.	0	18,339	18,339	Sept.	580	30,106	30,686
Apr.	0	18,980	18,980	Oct.	16,839	40,900	57,739
May	0	22,315	22,315	Nov.	34,611	53,103	87,714
June	0	23,131	23,131	Dec.	30,022	28,792	58,814
1946							
Jan.	56,367*	45,461*	101,828*	July	209,180	88,316	297,496
Feb.	57,782*	35,179*	92,961*	Aug.	.....	.....	.....
Mar.	85,810*	38,160*	123,970*	Sept.	.....	.....	.....
Apr.	130,816*	81,710*	212,526*	Oct.	.....	.....	.....
May	168,759*	76,162*	244,921*	Nov.	.....	.....	.....
June	141,090*	60,812*	201,902*	Dec.	.....	.....	.....

Source: Automobile Manufacturers Association.
Note: Figures are based on factory sales. * Revised.

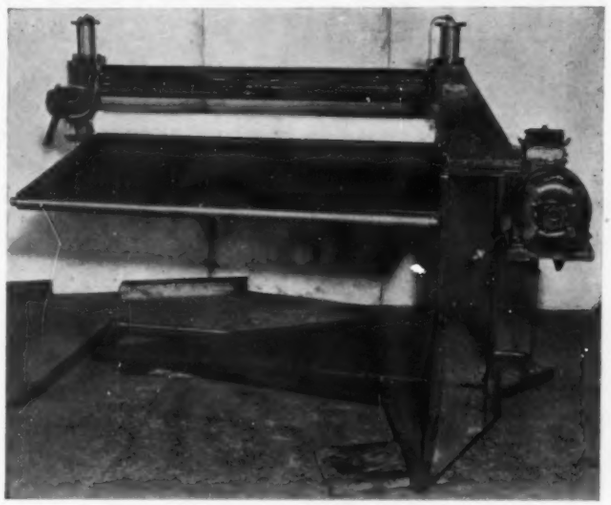
Rim Production

	1940	1941	1942	1943	1944	1945
Passenger Car	17,026,812	17,828,994	1,025,880	780,291	1,748,917	4,504,368
Truck & Bus	3,857,316	6,464,725	5,298,603	4,949,004	6,391,441	6,486,652
Agricultural	1,004,319	1,576,720	194,900	301,997	997,301	1,441,909
Earth Mover	2,767	2,593	1,814	945	703	1,308
Total	21,891,214	25,873,032	6,521,197	6,032,237	9,138,362	12,434,237

1946	Feb.	Mar.	Apr.	May	June	July
Passenger Car	715,798	791,405	1,074,479	1,155,792	1,026,227	1,364,704
Truck & Bus	256,743	361,033	457,821	316,796	409,094	372,871
Agricultural	164,664	123,791	133,502	115,491	162,838	59,938
Earth Mover	196	183	328	251	309	311
Total	1,137,401	1,276,412	1,666,130	1,588,330	1,598,468	1,797,824

Source: The Tire & Rim Association, Inc.

UTILITY
TRUCK TYPE
BAND BUILDER
BUILT UP TO 60" WIDE



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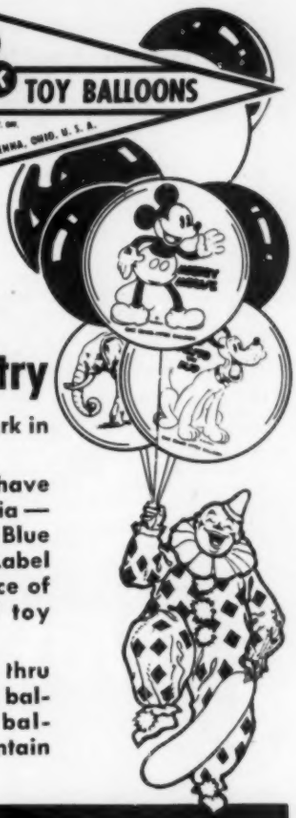
OAK-HYTEX TOY BALLOONS



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— and an outstanding trade mark in the toy field, too.

For 30 years OAK Balloons have been identified by this insignia — for 30 years the well-known Blue Box with the Yellow Diamond Label has been an unfailing assurance of top quality to the buyer of toy balloons.

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Crude Rubber	*Liquid Latex*
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COLORS for RUBBER

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C. K. WILLIAMS & CO.
EASTON, PA.

Automotive Pneumatic Casings

(Thousands of Units)

	Shipments					
	Original Equipment	Replacement	Export	Total	Production	Inventory End of Period
1935 (total)	19,263	29,406	1,514	50,183	49,362	8,196
Passenger Car	17,063	26,036	948	44,047	43,256	7,054
Truck and Bus	2,200	3,370	566	6,136	6,106	1,142
1936 (total)	21,446	30,866	1,073	53,385	56,041	10,717
Passenger Car	18,941	26,999	644	46,584	49,013	9,291
Truck and Bus	2,505	3,867	429	6,801	7,028	1,426
1937 (total)	22,353	29,886	1,246	53,485	53,310	10,383
Passenger Car	20,055	26,177	696	46,928	46,497	8,745
Truck and Bus	2,298	3,709	550	6,557	6,813	1,638
1938 (total)	11,516	30,567	1,049	43,132	40,907	8,451
Passenger Car	10,086	27,104	580	37,770	35,789	6,937
Truck and Bus	1,430	3,463	469	5,362	5,118	1,514
1939 (total)	18,208	38,022	1,279	57,509	57,613	8,665
Passenger Car	15,742	33,471	607	49,820	49,933	7,108
Truck and Bus	2,466	4,551	672	7,689	7,680	1,557
1940 (total)	22,252	35,346	1,176	58,774	59,186	9,127
Passenger Car	19,560	30,903	411	50,874	50,965	7,270
Truck and Bus	2,692	4,443	765	7,900	8,221	1,857
1941 (total)	24,780	39,895	1,489	66,164	61,540	4,436
Passenger Car	19,855	34,119	586	54,560	50,392	3,165
Truck and Bus	4,925	5,776	903	11,604	11,148	1,271
1942 (total)	6,680*	8,872*	207*	15,759*	15,351*	6,247*
Passenger Car	910*	2,734*	38*	3,682*	2,790*	4,432*
Truck and Bus	5,770*	6,138*	169*	12,077*	12,561*	1,815*
1943 (total)	6,128	18,547	225	24,900	20,423	1,883
Passenger Car	82	10,606	71	10,759	7,620	1,132
Truck and Bus	6,046	7,941	154	14,141	12,803	751
1944 (total)	6,654	26,439	263	33,356	33,446	2,013
Passenger Car	208	18,330	130	18,668	18,819	1,218
Truck and Bus	6,446	8,109	133	14,688	14,627	795
1945 (total)	5,984	36,479	504	42,967	44,524	3,077
Passenger Car	1,115	25,463	222	26,800	28,200	2,214
Truck and Bus	4,869	11,016	282	16,167	16,324	863
1946:						
Jan. (total)	576	4,870	91	5,537	5,973	1,436
Passenger Car	362	3,984	35	4,381	4,705	2,481
Truck and Bus	214	886	56	1,156	1,268	955
Feb. (total)	475	4,900	93	5,468	5,801	3,487
Passenger Car	270	4,034	29	4,333	4,585	2,496
Truck and Bus	205	866	64	1,135	1,216	991
Mar. (total)	730	5,786	105	6,621	6,686	3,392
Passenger Car	516	4,739	47	5,302	5,310	2,383
Truck and Bus	214	1,047	58	1,319	1,376	1,009
Apr. (total)	1,105	5,756	128	6,989	6,883	3,304
Passenger Car	774	4,752	57	5,583	5,515	2,327
Truck and Bus	331	1,004	71	1,406	1,368	977
May (total)	1,259	5,660	112	7,032	7,060	3,377
Passenger Car	895	4,730	51	5,676	5,700	2,386
Truck and Bus	364	930	61	1,356	1,360	991
June (total)	925	5,075	134	6,134	6,036	3,309
Passenger Car	711	4,279	56	5,046	4,921	2,290
Truck and Bus	214	796	78	1,088	1,115	1,019

Source: The Rubber Manufacturers Association, Inc. * Revised.

Cotton, Rayon and Nylon Tire Fabrics

(In Thousands of Pounds)

	Cotton				Rayon and Nylon [b]		
	Tire Cord Not Woven	Cord Fabric Woven	Chafer and All Other Tire Fabrics	Total	Tire Cord Not Woven	Tire Cord And Other Tire Fabrics	Total
1943:							
Jan.-Mar.	11,155	34,287	7,819	53,261	564	9,833	10,397
Apr.-June	11,625	34,684	8,549	54,858	1,253	10,185	11,438
July-Sept.	15,754	36,854	9,618	62,226	1,220	9,184	10,404
Oct.-Dec.	15,928	42,639	10,464	69,031	1,806	12,055	13,861
Total	54,462	148,464	36,450	239,376	4,843	41,257	46,100
1944:							
Jan.-Mar.	17,135	42,783	11,452	71,370	1,812	15,830	17,642
Apr.-June	17,587	40,580	11,499	69,666	1,353	19,586	20,939
July-Sept.	16,653	38,462	11,055	66,170	1,299	25,915	27,214
Oct.-Dec.	12,982	34,107	10,948	58,037	2,773	33,630	36,403
Total	64,357	155,932	44,954	265,243	7,237	94,961	102,198
1945:							
Jan.-Mar.	16,671	43,835	12,306	72,812	3,726	37,777	41,503
Apr.-June	16,044	42,383	13,604	72,031	4,064	42,476	46,540
July-Sept.	15,136	38,158	14,122	67,416	3,549	42,606	46,155
Oct.-Dec.	15,514	36,442	13,573	65,529	a	47,734	47,734
Total	63,365	160,818	53,605	277,788	11,339	170,593	181,932
1946:							
Jan.-Mar.	16,758	37,036	14,988	68,782	a	51,086	51,086

Source: U. S. Bureau of the Census.
Notes: (a) Included with tire cord and fabrics to avoid disclosures of operations of individual mills. (b) Fuel cell fabrics are not included with rayon and nylon tire cord and fabrics.

Automotive Inner Tubes

(Thousands of Units)

	Shipments					
	Original Equipment	Replacement	Export	Total	Production	Inventory End of Period
1935	19,218	28,095	754	48,067	47,879	8,231
1936	21,514	32,188	721	54,423	57,036	10,945
1937	22,464	29,554	749	52,767	52,373	10,312
1938	11,515	28,134	644	40,293	37,848	8,166
1939	18,190	31,998	1,002	51,190	50,649	7,036
1940	22,172	29,070	972	52,214	52,237	7,017
1941	24,722	33,749	1,232	59,703	57,433	4,686
1942	n.a.	n.a.	n.a.	13,958	12,568	5,742
1943	6,183	12,373	176	18,732	15,260	2,584
1944	6,461	19,739	190	26,390	26,750	2,823
1945	6,119	33,161	408	39,688	41,102	3,671
1946:						
Jan.	602	3,602	83	4,287	4,640	4,121
Feb.	492	3,806	88	4,386	4,874	4,418
Mar.	764	4,776	109	5,649	5,840	4,519
Apr.	1,113	4,842	124	6,079	6,114	4,190
May	1,268	4,903	107	6,278	6,463	4,373
June	931	4,648	121	5,700	5,710	4,377

Source: The Rubber Manufacturers Association, Inc.
n.a.—Not available.

Smoked Sheets—Spot Closing Prices

(New York Market—Cents per pound)

Year	High	Low	Avg.	Year	High	Low	Avg.
1910	288	141	206.60	1928	41¼	17	22.48
1911	184	114	141.30	1929	26⅞	15½	20.55
1912	140	108	121.60	1930	16½	7½	11.98
1913	113	59	82.04	1931	8⅝	4¼	6.17
1914	93	56	65.33	1932	4¾	2½	3.49
1915	79	58½	65.85	1933	9⅞	2⅞	5.96
1916	102	55	72.50	1934	15⅞	8¾	12.92
1917	90	52	72.23	1935	13¾	10½	12.37
1918	70	40	60.15	1936	23	13½	16.41
1919	57	38½	48.70	1937	26⅞	14	19.39
1920	56½	16	36.30	1938	17⅞	10¼	14.64
1921	21¼	11½	16.36	1939	24	14⅛	17.57
1922	28⅜	13⅝	17.50	1940	24	18¼	20.10
1923	37⅛	24¾	29.45	1941	24⅞	19⅛	22.40
1924	40⅛	17⅝	26.20	1942	22½	22½	22.50
1925	121	34⅜	72.46	1943	22½	22½	22.50
1926	88½	36¾	48.50	1944	22½	22½	22.50
1927	41¾	33	37.72	1945	22½	22½	22.50

Note: Price was fixed by Government on August 6, 1941, at 22½c a pound for non-war uses.

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market—in Cents)

Average Monthly Price Per Pound

	1939	1940	1941	1942	1943	1944	1945	1946
Jan.	8.94	11.19	10.66	19.85	21.34	20.76	22.36	25.49
Feb.	8.97	11.10	10.87	20.05	21.61	21.34	22.29	26.57
Mar.	9.00	10.90	11.08	20.42	21.98	21.65	22.43	27.52
Apr.	8.87	10.89	11.48	21.10	22.02	21.71	21.88	28.40
May	9.56	10.33	12.97	20.88	21.97	21.63	23.30	28.17
June	9.88	10.72	14.66	19.78	21.92	22.31	23.42	29.89
July	9.71	10.42	16.55	20.27	21.46	22.33	23.27	34.11
Aug.	9.30	9.84	17.06	19.45	21.09	22.11	23.10	36.31
Sept.	9.30	9.69	17.94	19.62	21.10	22.10	23.25	....
Oct.	9.24	9.62	17.31	19.79	21.00	22.32	23.85	....
Nov.	9.73	9.97	17.21	20.21	20.32	22.13	24.71	....
Dec.	10.97	10.18	18.09	20.55	20.32	22.28	25.21	....
Average for Year	9.46	10.40	14.66	20.16	21.34	21.89	23.25	....

Consumption of Vinyl Resins

(In Thousands of Pounds)

	Sheeting and Film [a]	Textile and Paper Coating Resins [b]	Molding and Extrusion Materials [a]	Adhesives [b]	All Other [c]
1945:					
July	1,212	2,041	....	....	1,669
Aug.	1,141	1,813	3,956	....	1,334
Sept.	1,185	1,367	2,216	225	666
Oct.	1,459	1,492	4,194	278	326
Nov.	1,135	1,102	4,814	329	479
Dec.	1,326	1,058	4,793	347	526
1946:					
Jan.	1,569	1,650	5,496	399	352
Feb.	1,666	1,035	5,910	390	589
Mar.	2,161	1,689	6,665	....	1,276
Apr.	2,243	1,436	5,265	....	1,804*
May	2,375	1,397	4,666	....	2,188*
June	1,857	1,235	4,978	....	2,369*

Source: Bureau of the Census.
Notes: (a) Includes weight of fillers, plasticizers and extruders; (b) Resin content; (c) Excludes data for protective coating resins. * Includes Adhesives.

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Rubber Industry Employment, Payrolls, Wages and Hours

Employment — Thousands of Production Workers and Index (1939 = 100)

	1945				1946			
	All Rubber Products		Rubber Tires & Tubes		All Rubber Products		Rubber Tires & Tubes	
Month	Number	Index	Number	Index	Number	Index	Number	Index
Jan.	199	164.9	97	178.5	209	172.7	99	182.4
Feb.	200	165.1	96	178.0	214	177.1	101	187.3
Mar.	209	173.2	96	176.8	220	181.5	104	191.6
Apr.	205	169.6	93	172.2	220*	182.0*	104	192.8
May	201	166.6	92	169.2	223	184.4	...	....
June	199	164.5	90	166.7	...	....	...	....
July	194	160.5	88	162.1	...	....	...	....
Aug.	191	158.0	86	159.3	...	....	...	....
Sept.	165	136.5	72	132.7	...	....	...	....
Oct.	187	154.4	88	163.0	...	....	...	....
Nov.	194	160.1	91	168.9	...	....	...	....
Dec.	203	168.2	96	177.8	...	....	...	....

Payrolls — Production Workers Pay Rolls Unadjusted Index (1939 = 100)

	1944		1945		1946	
Month	All Rubber Products	Rubber Tires & Tubes	All Rubber Products	Rubber Tires & Tubes	All Rubber Products	Rubber Tires & Tubes
Jan.	291.0	288.9	323.2	342.4	290.1	272.6
Feb.	295.7	295.6	323.6	339.8	292.1	271.9
Mar.	297.0	299.3	315.4	301.9	302.8	281.1
Apr.	281.3	280.0	315.9	306.0	324.9	312.9
May	283.3	283.0	299.8	288.6	....	....
June	281.4	278.5	304.3	293.8	....	....
July	279.7	280.9	298.7	286.8	....	....
Aug.	291.0	294.3	265.7	249.7	....	....
Sept.	294.5	300.8	231.3	211.4	....	....
Oct.	293.3	297.5	254.2	239.8	....	....
Nov.	293.6	298.2	257.8	240.2	....	....
Dec.	308.5	319.4	275.5	256.7	....	....

Wages — Average Weekly Earnings

	1944		1945		1946	
Month	All Rubber Products	Rubber Tires & Tubes	All Rubber Products	Rubber Tires & Tubes	All Rubber Products	Rubber Tires & Tubes
Jan.	$48.18	$55.79	$54.49	$64.29	$46.71	$50.29
Feb.	48.95	57.21	54.40	64.04	46.85*	49.21*
Mar.	49.53	58.38	50.62	57.29	46.46*	49.72
Apr.	48.12	55.63	51.93	59.75	49.68	54.60
May	48.98	57.11	50.09	57.32	....	....
June	49.30	56.78	51.45	59.20	....	....
July	49.17	57.01	51.81	59.59	....	....
Aug.	50.24	58.62	46.76	52.81	....	....
Sept.	50.99	59.33	47.20	53.59	....	....
Oct.	50.92	58.54	45.57	49.48	....	....
Nov.	50.59	58.30	44.68	47.78	....	....
Dec.	52.64	61.62	45.48	48.54	....	....

Wages — Average Hourly Earnings

	1944		1945		1946	
Month	All Rubber Products	Rubber Tires & Tubes	All Rubber Products	Rubber Tires & Tubes	All Rubber Products	Rubber Tires & Tubes
Jan.	$1.066	$1.224	$1.151	$1.317	$1.121	$1.255
Feb.	1.072	1.240	1.149	1.314	1.129	1.266
Mar.	1.086	1.256	1.117	1.260	1.138	1.275
Apr.	1.075	1.234	1.136	1.294	1.234	1.422
May	1.087	1.257	1.132	1.284	....	....
June	1.092	1.254	1.140	1.307	....	....
July	1.094	1.256	1.138	1.296	....	....
Aug.	1.102	1.264	1.119	1.269	....	....
Sept.	1.117	1.273	1.098	1.243	....	....
Oct.	1.108	1.263	1.100	1.231	....	....
Nov.	1.107	1.258	1.112	1.249	....	....
Dec.	1.130	1.290	1.113	1.247	....	....

Hours — Average Weekly Hours per Worker

Month	1944	1945	1946	Month	1944	1945	1946
January	45.2	47.3	41.7	July	45.0	45.5	...
February	45.7	47.3	40.8*	August	45.6	41.8	...
March	45.6	45.3	40.8*	September	45.7	43.0	...
April	44.7	45.7	40.3	October	45.9	41.4	...
May	45.1	44.2	...	November	45.7	40.2	...
June	45.2	45.2	...	December	46.6	40.9	...

Source: U. S. Department of Commerce. * Revised.

Indexes of Production, Shipments and Inventory For The Rubber Industry

Production 1935-1939 = 100 (Based on man-hours)

Month	1944	1945	1946	Month	1944	1945	1946
Jan.	242	247	215	July	227	218	...
Feb.	244	247	216*	Aug.	231	193	...
Mar.	242	236	221*	Sept.	230	172	...
Apr.	231	233	219*	Oct.	231	191	...
May	230	224	219	Nov.	231	192	...
June	228	222	....	Dec.	239	205	...

Shipments—Average Month 1939 = 100 (Based on $ Value)

Jan.	274	311	229	July	295	274	...
Feb.	299	351	242	Aug.	288	255	...
Mar.	290	351	260	Sept.	297	200	...
Apr.	295	356	...	Oct.	342	260	...
May	293	333	...	Nov.	293	212	...
June	316	333	...	Dec.	341	292	...

Inventory — Average Month 1939 = 100 (Based on $ Value)

Jan.	179.6	170.6	173.7	July	174.7	183.3	....
Feb.	185.2	176.7	179.9	Aug.	172.9	182.4	....
Mar.	187.6	175.5	186.4	Sept.	174.3	177.4	....
Apr.	190.6	175.3	....	Oct.	174.3	167.7	....
May	188.1	178.3	....	Nov.	176.1	167.1	....
June	182.1	178.7	....	Dec.	169.6	169.0	....

Source: U. S. Department of Commerce. * Revised.

Various Compounding Materials Consumed by the Rubber Industry

Material	1939	1940	1941	1942	1943	1944	1945
Asphalt [a]							
Short tons	24,293	22,772	20,536	22,263	16,510	20,189	.....
% of total	1.0	0.9	0.6	0.6	0.5	0.6	.....
Barite (Barytes):							
Short tons	3,319	4,283	9,800	6,334	8,000	10,000	10,000
% of total	2.0	2.3	4.2	3.6	3.9	2.9	2.1
Carbon Black:							
Short tons	158,311	155,090	219,751	147,974	236,737	369,015	402,193
% of total	56.5	58.5	68.2	65.8	75.2	78.7	78.9
Clay, Kaolin:							
Short tons	90,287	92,640	127,055	51,334	50,964	59,588	109,936
% of total	11.6	11.1	11.6	5.1	5.5	6.8	11.7
Clay, Fire & Stoneware:							
Short tons	3,770	10,104	9,000	5,000	10,259	7,160	7,800
% of total	0.2	0.4	0.2	0.1	0.2	0.1	0.1
Lead Sulfate, Basic:							
Short tons	140	128	200	89	131	268	200
% of total	2.5	2.1	1.9	1.1	2.3	4.2	5.2
Lime:							
Short tons	1,357	1,879	3,058	1,381	2,039	5,634	7,170
% of total	0.03	0.03	0.05	0.02	0.05	0.13	0.10
Litharge:							
Short tons	1,404	1,590	3,968	3,460	4,302	3,023	1,864
% of total	1.6	1.8	3.3	3.8	3.8	2.2	1.3
Lithopone:							
Short tons	3,189	3,387	3,547	1,047	1,078	726	977
% of total	2.2	2.2	2.0	0.8	0.8	0.5	0.7
Mica, Ground:							
Short tons	2,539	1,731	3,476	1,754	3,063	1,137	3,715
% of total	8.2	6.2	8.0	3.7	6.0	2.2	7.0
Sulfur:							
Short tons	49,000	54,000	63,000	40,000	51,000	63,000	65,000
% of total	2.5	2.5	2.4	1.4	1.8	1.9	2.0
Talc [b]							
Short tons	31,078	28,501	58,114	40,487	48,994	51,833	62,049
% of total	12.4	10.0	13.9	10.0	11.8	13.0	15.0
Zinc Oxide:							
Short tons	70,187	70,979	98,429	52,717	67,898	59,518	63,447
% of total	61.3	62.8	63.4	53.0	47.4	42.3	49.6

Source: U. S. Bureau of Mines.

Notes: [a] Solid and semi-solid products of less than 200 penetration. [b] Includes pyrophyllite and ground soapstone.

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Possible causes of failure to record elongation properly. a. The ruling of the chart is not at the proper angle for this recorder. Some require lines at right angles; others have the elongation lines at less than 90° angle to the load line. For Model J, elongation lines are frequently curved, and will not record correctly on a tester requiring a chart with straight elongation lines. Some recorders magnify the elongation line, notably Models J, J-5, Q and X-3, and record incorrectly on charts not printed for the proper magnification. b. Where chart is held in guides, errors may be traced to faulty cutting of the chart, which should be a perfect rectangle, with edges cut exactly at the line printed as a guide. c. Errors can be due to failure of platen, pen and clamp to start moving at the same time, usually caused by excessive wear in the sliding mechanism.

If error still persists after the above procedure, it may be advisable to return the tester to the factory for correction.

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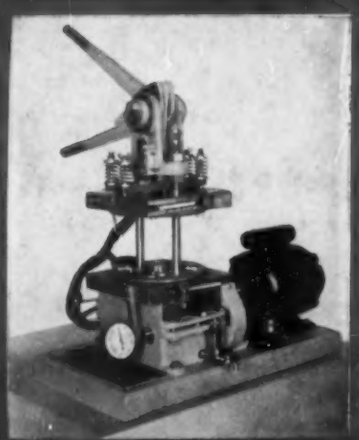

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